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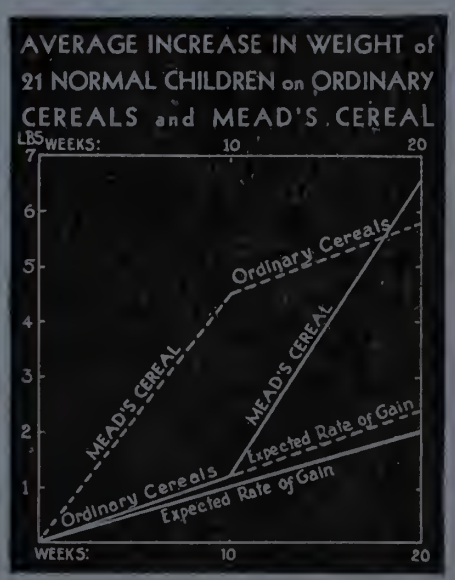


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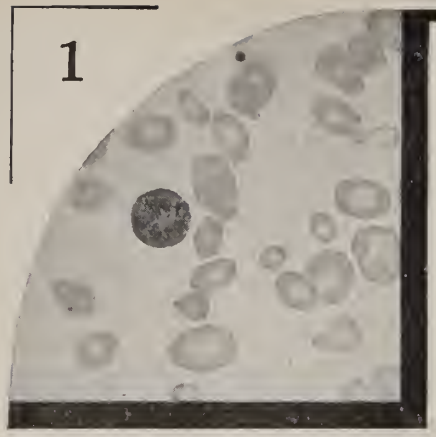

1

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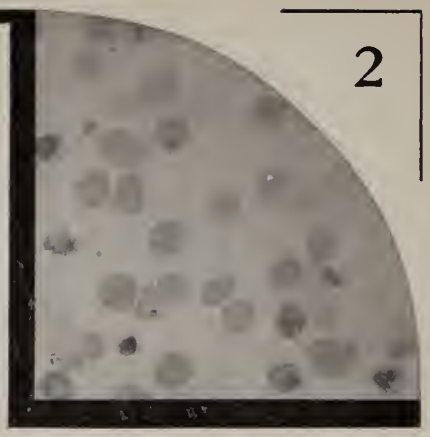

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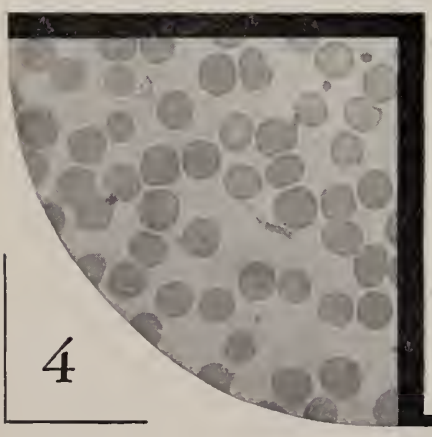

4

*At right*—Seventeenth day of treatment. R.B.C. 2,440,000 per cu. mm.; Hb. 56%.

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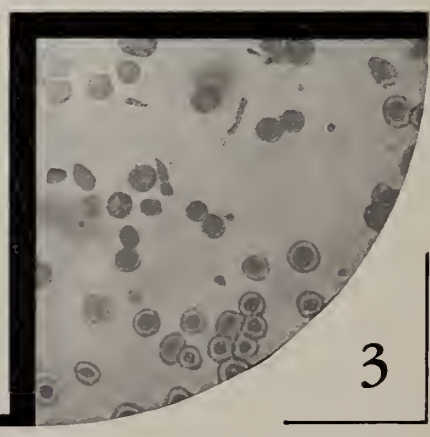

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| Va. Society O. L. & O. | F. P. Smart, Norfolk | H. G. Preston, Harrisonburg | Harrisonburg, Va., Spring, 1933. |
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## OUTLINE OF A PERSONALITY STUDY FOR OFFICE USE.*

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The idea of the personality as a whole is still somewhat vague when one considers its practical application. It is stated that the patient should be treated and not the disease. There are not diseases, there are only sick people. There is a person present as well as a diseased organ. The physician should know this person that he must treat, certainly as well as the symptom complex that he is treating, or as well as the life cycle of the organisms that are causing the disease. Not knowing the personality, how can he heal it or even recognize when it is whole?

Experience undoubtedly does bring the physician this ability in great measure. The greater this characteristic is possessed the greater the physician is said to be schooled in the art of medicine, that power, added to by years of observation, which allows him to sense the total situation. If there is any one quality which should distinguish the rural physician from the urban, it should be his grasp of the personality of his patient, as in the rural districts each individual is more distinct, his life story known, so that the physician has the opportunity to know the man before he sees him as a patient.

So much has been written on the personality of late that now bibliographies of bibliographies are published. The definition of this elusive entity differs with each individual writer, yet there seem to be at present two ideas emerging clearly. The first is that of some psychologists who use the term to denote the relation of an individual to the social group. Galliland[1] contrasts personality with, first, temperament, which is used to refer to the more stable, emotional tendencies of the individual; second, character, which implies more the moral phases of conduct; and, third, self, the whole individual. He divides self according to the usage of James into the material, the social, and the spiritual self, taking the social self as the same as personality.

The other conception is that of the psychiatrists who speak of the integrated personality. They have the idea that as the different physical parts of man have evolved his mind, his spirit, and his environment have evolved through many layers or integrations, if you will, so that now these parallel and interfluent evolutions have produced a unit, which, at each moment, is in a process of re-integration, but also at each moment lives and acts as a unit entirely dependent on its parts on the one hand, but on the other hand having characteristics not inherent in any part. The man in action, the man as he is in life, is the unit under discussion.

TABLE I

MAIN PERSONALITY TRAITS

(Amsden and Hoch)

| | |
|---|---|
| I. | Intelligence, Ability to Learn, Judgment. |
| II. | Output of Energy. |
| III. | Estimation of Self. |
| IV. | Adaptability Toward the Environment. |
| V. | The Mood. |
| VI. | Instinctive Demands (Sex). |
| VII. | General Interests. |
| VIII. | Pathological Traits. |

Amsden and Hoch,[2] in their guide to the descriptive study of the personality, divide the traits to be considered into eight groups: (1) Intelligence. (2) Output of energy. (3) Estimation of self. (4) Adaptability toward the environment. (5) The mood. (6) Instinctive demands (sex). (7) General interests. (8) Pathological traits.

TABLE II

PERSONALITY TRAITS

(Terman)

| | | |
|---|---|---|
| I. | Intelligence | |
| II. | Will Temperament | |
| | Energetic | Weak |
| | Prompt | Slow |
| | Persistent | Vacillating |
| | Careful | Reckless |
| | With ease | With difficulty |

*Read before the sixty-third annual meeting of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

III. Emotional Temperament
  Optimist
  Pessimist
  Elated-depressed
IV. Moral Attitude or Judgment
  Trustworthy
  Not trustworthy
V. Asthetic Sensibility

The psychologists, however, in their testing divide the different traits as follows: (1) Intelligence. (2) Will temperament. (3) Emotional temperament. (4) Moral attitude or judgment. (5) Asthetic sensibility.

TABLE III

| | |
|---|---|
| I. Extrovert— | |
| A. Interested in action | |
| B. Interested in social affairs | |
| C. Interested in general principles | Robust? |
| D. Is race conscious. | |
| II. Introvert— | |
| A. Interested in self | |
| B. Interested in loves details | |
| C. Is sensitive | Asthenic? |
| D. Is retiring | |

Still further from the psychiatrist, two types, the extrovert and introvert, arise. The former is interested in action, in objects, in people, in general principles, not details, while the latter is more a thinker, more retiring, more sensitive, interested in himself, and in facts, no matter how gruesome. It is intimated that the personality in which the main interest is outward is more often found in bodies of the short, thick type, while the introspective individual is found in the tall, thin, asthenic body structure. The psychiatrists, moreover, describe certain abnormal types according to the manner in which they react to their environment: (1) The dreamer, who uses phantasy to satisfy when reality fails; (2) The neurotic, who has been unable to civilize the instinctive trends and is seeking some alibi which will bring satisfaction; (3) The manic, who flies into reality to escape the conflict of the moment; (4) The depressive, who seeks death as an escape; (5) The antisocial or unmoral type; (6) The paranoid or suspicious type, who evades issues by blaming all conflicts on external sources.

Adler[3] emphasizes the value of self-estimation when he explains inferiority feelings as well as the over reaction that causes an apparent state of superiority. There are many more aspects of this situation, and it is undoubtedly true to understand a personality a complete analysis is necessary, yet such an effort is impossible except in the select few. What the doctor needs, however, is a working picture and not a detailed analysis. He has to trust to his impressions at first, then the biography or history that the patient gives, and, finally, his observations of the patient's behavior to enable him to make the correct approach, to protect the personality during the illness, and, finally, to resynthesize at the end. In such an incomplete way, of course, there can be no exact conclusion, but it is certainly possible to organize a great deal of data by a little orderly thinking. He can estimate all the traits mentioned above which are essential to him.

The doctor is interested in the intelligence, in the mood, in the energy output, and whether it is directed toward or away from self. Next, is the patient balanced emotionally? What is the character which depends on degrees of courage, resolution, and perseverence? What is the estimation of self? Are there feelings of inferiority? What is the reaction to the environment? Does the patient face his difficulties, is he side-stepping a conflict by blaming some person, some object or perhaps some pain or disease, or is he escaping by means of imagination and dreams? Finally, is there a flight which in the feebleminded becomes a panic, in the moody person mania or depression but in the queer and over conscientious individual a division or perhaps a complete dilapidation of the personality unit? These traits are the essential ones in all personality studies and they are what the doctor senses, but does not always label as such.

Intelligence need not be accurately gauged, but it is very necessary to know whether the person is a moron or feebleminded. The face or the expression may or may not indicate the intelligence. More often it does not. Calculations are often unfair. It can be found, however, first, if the patient's education is compatible with his opportunities; second, if he is skilful with his hands, and, third, if other people seek his advice. The ability to learn, the manual intelligence and the judgment are thus touched. The mood is expressed in the voice, the manner and the face. "Do you get tired?", brings out the manic, who never gets tired, and the mild depression which often is disguised as a neurasthenic. "Do you cry?" "Do you have blue spells?" "Are these periodic?" These are questions which are next employed. The mood is sufficiently obvious to need very little exploiting. Energy as used means interest and is something kin to vitality.

In this respect, the patient's manner, the speed and force of the speech and the general expression suggest immediately the amount of energy output. Of course, in a very sick patient the usual force is changed, but if the output before illness can be determined it may give some index to the resistance to disease one may expect and how likely the personality can be mended. The direction of energy is estimated also by the manner and to a very limited degree by the structural type. If the person is introverted he must be handled slowly and with care. The fundamental complaint will not be obtained until there is much probing. On the other hand, the extrovert has a tale to tell, and usually a diagnosis made, so it is best to let him talk it out to obtain cooperation with the necessary investigations to come later.

Instability of the emotions is most marked in abnormal personalities, especially the neurosis, yet in the normal there are those who constantly put too much emotion into everything they do. These people call for a guarded interpretation of symptoms. There is the worrier and the anxious patient—both based on poor habits of thinking. The recognition of emotional stability is part of the first impression but it is also developed through observation. Glandular dystrophies and organic handicaps, such as chronic disease, play their role here. The sentiments, the exaggerated type of speech, and the repetition of stereotyped phrases suggest an insufficient emotional control. The moral side of character interests the physician very little, but he is interested in the degree of courage, resolution and persistence. Character means conduct in conflict; disease also connotes strife. The strong character may be immoral, but self-control in the combat with disease means much. "Is he courageous or cowardly?" "Is he imitative, easily led?" "Does he give himself into the hands of the doctor and follow orders?"

The conceited person is likely to be suspicious. He also tends to blame others for his troubles; he very often makes a treacherous patient, not playing fair, often directing his own case. Inferior feelings, in some instances, are buried underneath causing sensitiveness, and calling for special attention. Again, this characteristic comes out in the manner, the facial expression and the conduct of the patient. Also the history of too much mothering and of late weaning make one suspicious of its presence. The absence of play in childhood and the antagonism toward the parent of the other sex help in this maladjustment.

All the personality traits so far considered could be thought of as environmental reactions. They, however, depend on the past, while the physician's chief concern is the reaction to the present difficulty. As indicated above, the personality has three methods of handling problems: One, by meeting the situation squarely; the second, by attempting to side step or compromise; and the third, flight. The first is the correct method. The second is sometimes very efficient but most often failing. The sidestepping is often done by fixing the cause for failure on some outside object, a phenomenon that explains some disorders when a pain or a paralysis is used to escape inner conflicts. For example, it is very important in treating the neuroses, when they make every effort to use a physical alibi, or some mysterious phantasy such as nerves, to explain the exact cause of the situation, thus forcing them to face it squarely. The last form of reaction, flight, is usually disastrous. It may be a panic, as seen in the feebleminded, and in the blustering individual, at heart a coward; or, when more serious, involving the whole personality, it may become some form of mental disease.

TABLE IV

Outline for Personality Study

I. Intelligence (Impression of very little aid)
   - A. Is education compatible with opportunities?
   - B. Is he skilful with his hands?
   - C. Do other people seek his advice?

II. Mood (Impression practically diagnostic)
   - A. "Do you get tired?"
     1. Manic never
     2. Neurasthenic always
   - B. "Do you cry?" "Do you have blue spells?" "Are they periodic?"

III. Energy Output (Manner and speech best indicators)
   - A. What is the amount? Is he—
     1. Vivacious?
     2. Apathetic?
   - B. What is the direction? Does his interest turn—
     1. Outside (Extrovert)?
     2. Inside (Introvert)?

IV. Emotional Control (Behavior—Speech)
   - A. Is there exaggeration, so-called "high strung" person?
   - B. Is there wasting due to poor habits of thinking—(Worries)?
   - C. Is there a pathological personality reaction?
     1. Neurosis (Civilized with difficulty)
     2. Glandular dyscrasias.

V. Character (Appearance and cooperation)
  A. Is he courageous?
  B. Is he imitative, easily led?
  C. Does he turn his case over to the physician?
VI. Estimation of Self (Appearance—Development)
  A. Is there conceit with suspiciousness?
  B. Is there hidden inferiority with sensitiveness?
  C. Is this due to warped development?
VII. Reaction to Environment (Impression and Observation)
  A. Is he facing life?
  B. Is he side-stepping by—
    1. Blaming some person or object?
    2. Using imagination or deams?
  C. Is there flight which becomes—
    1. A panic (Feebleminded)
    2. A mental disease in—
      a. moody people?
      b. in the over conscientious?

Thus, by organizing our impression and bringing out a few facts of behavior, an estimation of the total person can be made, as well as the personality reaction to the disease itself. As the observation continues through the course of illness these traits can be more correctly judged, and advantage taken of this knowledge to strengthen weak characteristics. Convalescence, however, is the doctor's great opportunity; frequently people are discharged healed in body but doomed to chronic invalidism because of personality damage. Yet, if the physician understands that the success or failure of any therapy in the last analysis depends on the reaction of the total personality, he will seize this time to reintegrate the whole. This is done, first, by seeing that the patient has a complete understanding of the situation and is not left any excusing mystery; second, by forcing him to face the facts as they are as nearly as possible; and, last, when the situation is impossible, when some function is damaged beyond repair, by teaching him to climb above the impossible, to sublimate, as it were, by using some mental stimulus as a substitute. Certainly it is the duty of every physician to estimate the total person at first, to guard it through the disease, and reorganize it so that the person will be able at the end to meet life at least as successfully as before the illness, even if the opportunity is not seized to improve the personality reaction and to bring greater success through a broader vision.

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### Discussion

Dr. Beverley R. Tucker, *Richmond:* Gentlemen, I think this is a very important paper. The difficulty is to apply it. If we see patients with the disease only in mind, or the complaint only in mind, we shall often fool ourselves. I was with a pathologist the other day when someone was talking about a man who had a bad infection. There was a great deal of sympathy expressed for the man. This pathologist said: "Did you ever think about the bacterium, about how he is suffering? He was in his natural host; he was living in his regular environment, eating in it, just as we do, and doing very well, and then all these doctors came and put chemicals on him and cut him out and ruined his life." So, very often, we have a history of a case but we do not realize at all what the problems are, or what the environment is. We have to know our patient, know something of the heredity of the patient, know something of the environment of the patient. Much more than that, we have to know something of the ambitions and desires of the patient; we have to know something of the responsibilities of the patient and something of that patient's ego. How is he going to adjust himself to his illness?

As an illustration, we had a case sent us some years ago of post-puerperal psychosis. This woman came in, and we thought she was toxic and commenced to eliminate her until we nearly eliminated her physically; then we stopped. Then we thought that maybe this woman had something back of that and that it was not a toxic case. Investigation proved that she lived in the country and had no servants and had a husband and five children. It was after the birth of the fifth child that she became sick. She also had an aunt of her husband's, who was blind, living at the house; and her father, who was hemiplegic, also lived at the house. This woman did all the housework, all the washing, all the cooking, for the whole family. When the other child, an extra burden, came, she simply could not face the situation. When I found out these things, I sent for the husband. The husband promised me that he would send to some other relatives the blind lady and the hemiplegic and get adequate help in the house. This woman had for five weeks lain in bed; she had to be fed; she had not spoken a word; she lay in a position, with her hands crossed on her breast, that really simulated death. I told her that we had found out these things, and that these two old people would be sent away and her husband would get help for her and that her environment would be mitigated, and there was no reason why she should not get well. That afternoon she was sitting up in a chair, and three days later was walking all over the place. She went home. Three months after that she came to Richmond and came to see us, she was strong and healthy. Her husband had done what husbands do not always do—fulfilled his obligations.

I think this paper is very important.

## PARTIAL RESECTION OF THE STOMACH FOR ULCER.*

G. PAUL LaROQUE, M. D., F. A. C. S., Richmond, Va.

The ulcer to which reference is made in this paper is on the stomach side of the pyloric

*From the Department of Surgery, Medical College of Virginia.
Read before the sixty-third annual session of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

sphincter, of chronic duration, seriously crippling in its effects, dangerous to life, and has not been cured by medical and dietetic remedies.

The working diagnosis of gastric ulcer usually can be made by a combined clinical and X-ray examination. The differential diagnosis from cancer and from benign tumors is not always easy.

Reliable roentgenological examination requires much clinical and technical effort on the part of expert roentgenologists. It is not a job to be delegated to a technician.

The ultimate and exact differential diagnosis must be made by an expert pathologist from a study of the gross and microscopic specimens.

A stomach the seat of chronic indurated ulcer shows definite striking pathological lesions. There are areas of induration, often of large size, and usually surrounding adhesions resulting from penetration of the ulcer. On the inside of the stomach there are observed raw, bleeding areas with surrounding inflammation, areas of thickened mucous membrane, often in the form of polypoid growths, frequently stenosis of the pylorus, and other areas of deformity.

It is not believable that any treatment short of removal of the area involved could be expected to give relief from the symptoms arising from such stomachs. The dangers of resection of the stomach have caused surgeons to attempt to relieve the symptoms of the disease by such operations as gastro-enterostomy, excision of the ulcer, sleeve-resection of the area involved, and other operations too numerous to mention, which, by their very nature, could not by any theory be expected to cause beneficial changes in the pathological state of affairs, and which in practice have added complications to the original disease.

The operation of resection will always be one of some magnitude, and is not a job for amateurs. The trouble in the past has been, and doubtless in the future will be, that surgeons, lacking in ability to do a proper resection, have attempted to substitute some other operation which they may be able to do, and often make matters worse.

The resection can be done by trained surgeons with little risk to life upon patients who have not had the disease sufficiently long to develop serious local complications in the form of dense adhesions, or the advanced nutritional disturbances caused by secondary anemia and the prolonged starvation of indigestion.

In 75 per cent of the cases it is possible after excision of the involved area to anastomose the stomach end to end, or end to side, according to the method of Haberer or Finney, thus restoring the continuity of the stomach and bowel in the most nearly normal way. In a small proportion of cases where the stomach resection is to be made so high that it is impracticable to bring the ends together without tension, an end to side anastomosis of the stomach to the jejunum may have to be done.

Without going into details in describing the technic, which will be done in a later paper, the best exposure with the least retraction is obtained through a transverse incision: the duodenum is thoroughly mobilized to the left as far as the midline of the abdomen; exact haemostasis is obtained by individual ligation of blood vessels; the stomach and duodenum are cut at the selected points well above and below the area of disease without the use of

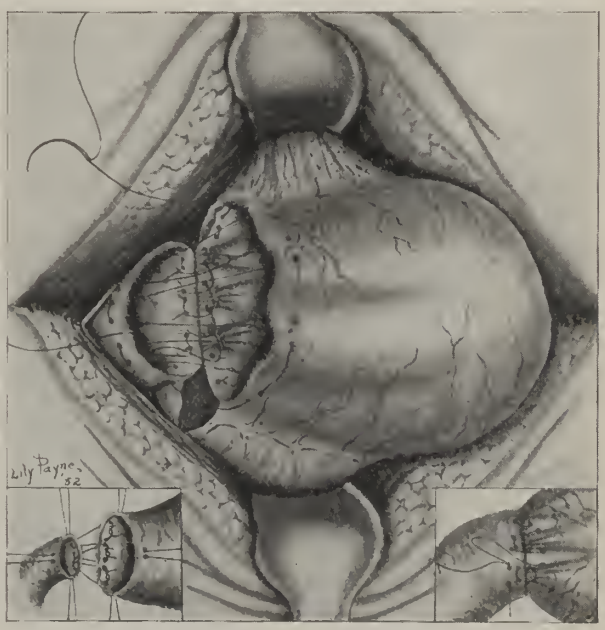


Fig. 1.—End to end anastomosis of the stomach to the duodenum. Note the larger amount of tissue included by the suture on the stomach than on the duodenum to make the ends fit. This can be done in three out of four cases.

clamps; and the reconstruction of stomach and bowel continuity established by end to end or end to side suture without the least tension at the site of union and with not a single suture made tight enough to cause necrosis.

In the summer and early autumn of 1931, we operated upon four patients in this way

for stomach ulcer, and have followed them closely now for more than a year, to determine the final results.

All the cases have had the usual clinical history of from three to twelve months' duration. In two, ulcerated carcinoma was strongly suspected from pre-operative study, and even after the stomach was exposed at operation. In one there was in addition to ulcer also a benign tumor of the hypertrophied mucous membrane prolapsing from the stomach into the duodenum. Three of the cases were of ulcer in a syphilitic stomach. (Dr. Pusch has made a detailed study of these cases, and will report them in his paper at this meeting of the Society). One was an ordinary peptic ulcer. One of the cases was a woman twenty-six years old; one a man twenty-three years old; one a man fifty-one years old; the fourth a man thirty-five years old. One case had had massive hemorrhage from the stomach; the other three had bled in smaller quantities over a long time. The hemoglobin in one case after a large hemorrhage was eighteen per cent, though it returned to nearly normal before operation. In the other cases, the hemoglobin varied from sixty-five per cent to eighty-five per cent at the time of operation.

The amount of stomach resected varied from three and one-fourth to four and one-half inches, measured on the lesser curvature. In three of the cases it was possible to reconstruct the continuity of the stomach and duodenum by end to end anastomosis without tension. In one, because of the great amount of stomach removed, it was not possible without tension to bring the ends together; consequently the open end of the stomach was sutured to the beginning of the jejunum through an opening in the meso-colon (Polya).

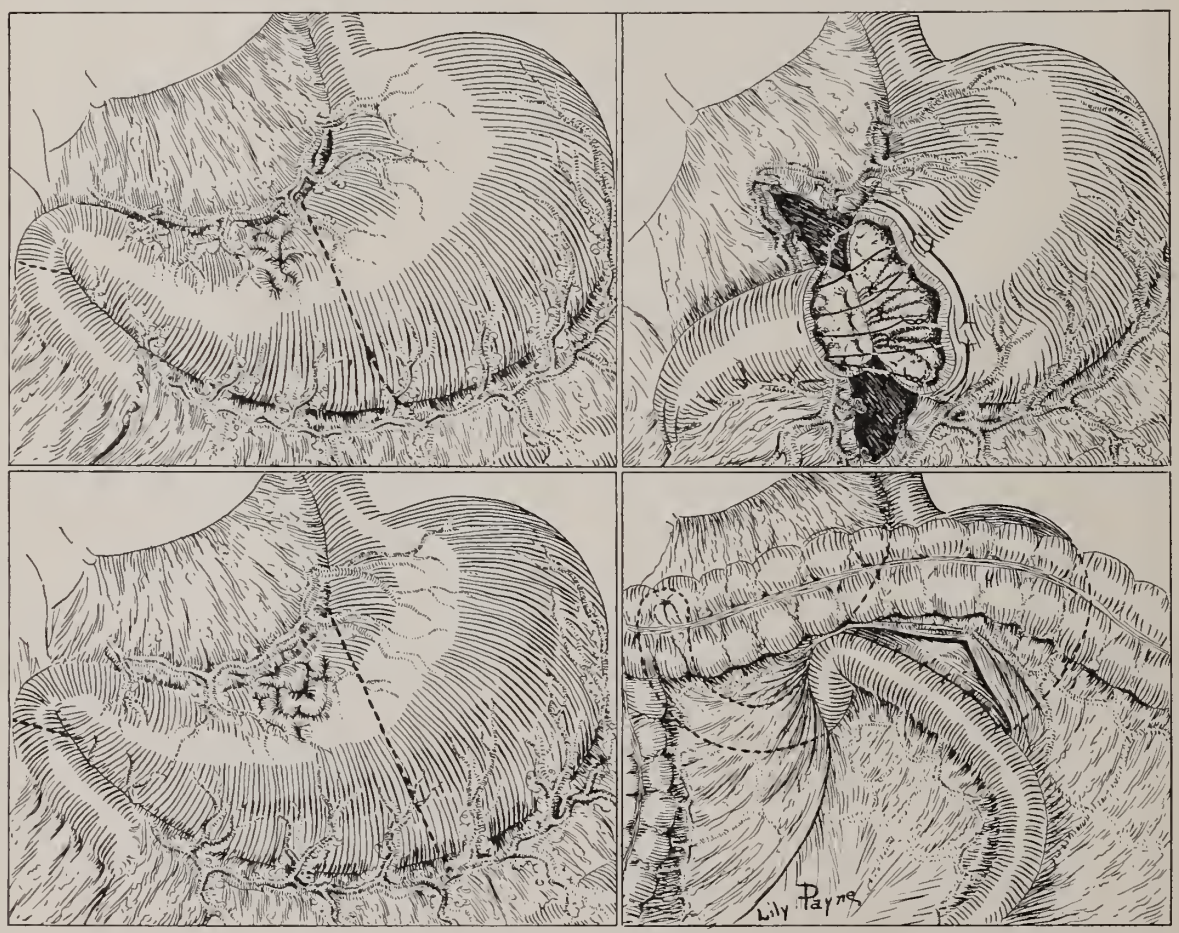


Fig. 2.—The two upper drawings show end to end anastomosis after removal of the stomach to a point representing two-thirds of the lesser curvature. The two lower pictures represent the end to side union of the stomach to the jejunum after removal of so much of the stomach that the end to end approximation could not be secured.

All four of these specimens were studied in great detail by Dr. Lewis C. Pusch. The ulcers were all chronic and indurated, varying in size from that of a nickel to a half-dollar. In one case there were two ulcers, separated by a polypoid mass of thickened mucosa which prolapsed into the duodenum. In all the cases there was considerable gastritis and areas of thickened mucosa and wall of the stomach. In one case there was gross penetration of the ulcer into the gastro-hepatic omentum. In three of the cases the stomach was the seat of syphilis. There was partial pyloric stenosis in all four cases, the stenosis being due to great pyloric thickening. Cancer was not present in any case.

All four cases had a normal convalescence without vomiting, and without complication. They were all out of bed from eight to ten days following operation. X-ray examination since operation in all cases have shown the stomach functioning well, and its anatomic relations quite normal.

All of the cases have been seen and questioned at frequent intervals over the year, and are totally without symptoms of stomach disease, eating normally of regular diet, and working hard. They have had no need of medical treatment.

Discussion

Dr. J. Shelton Horsley, *Richmond:* Dr LaRoque's position in advising partial gastrectomy for benign lesions of the stomach is undoubtedly sound. Many of these benign gastric lesions, whether ulcer or benign tumors, become cancerous later on. Miller, Eliason and Wright reported from their personal experience eight cases of benign tumors of the stomach, polyp-like in shape, in three of which there was malignancy at the base. In a large series of supposedly benign tumors of the stomach gathered from the literature they found about 35 per cent of all cases showed malignancy. A certain percentage of gastric peptic ulcers become cancerous. About nine years ago I operated upon a patient who had cancer of the stomach, doing a typical Billroth I partial gastrectomy, anastomosing the stump of the stomach to the stump of the duodenum. The patient developed obstruction. A gastro enterostomy was done, but as he was rather old and feeble he did not survive. Necropsy showed that the cause of the obstruction was swelling at the anastomosis of the stomach and duodenum, due to the turning in of a large amount of stomach and duodenum.

Following this case I modified the typical Billroth I in two respects. The lesser curvature of the stomach was aligned along with the upper border of the duodenum. Alvarez, Klein and others have shown that the tissue along the lesser curvature of the stomach initiates peristalsis and is important to preserve, whereas the greater curvature has no such function. It is important, then, to restore the proper relations of the lesser curvature to the upper border of the duodenum.

The other modification is as follows: After the stump of the stomach has been fixed in its relative position to the duodenum, the duodenum is flared open by an incision of about an inch or an inch and a half in its anterior surface. This makes a large exit for the gastric contents and renders it possible to turn in a considerable diaphragm without causing obstruction. Sometimes an end-to-end anastomosis can be made, after flaring open the duodenum in this manner, but, if not, the lower redundant portion of the stump of the stomach is folded in with a purse-string suture.

About two years ago I reported before the American Surgical Association partial gastrectomies that had been done for benign lesions for a ten-year period preceding July 1, 1929. I had done a total of twenty-two partial gastrectomies, according to the technic just described, without a death.

If so much of the stomach has to be removed as to make this technic impossible, a modification of the Billroth II method, such as the Hofmeister operation, seems to be indicated.

During the convalescence of partial gastrectomy cases it is important to give the stomach as much rest as possible, and at the same time to keep up the patient's water, calories and electrolytes. This is best done by the continuous intravenous administration of 5 per cent dextrose in Ringer's solution. An intravenous cannula devised by Dr. Guy W. Horsley and me is inserted into the vein and has the advantage of permitting either a large flow or a small flow. If a transfusion is necessary it can be done through this cannula which has its base ground to fit an ordinary Luer syringe, and the intravenous administration can then be continued.

Dr. LaRoque, closing the discussion: The main purpose of my paper was to condemn gastro-enterostomy for ulcer disease on the stomach side, because it adds another disease—gastro-enterostomy disease. Now, with good technic, the diseased area of stomach can be removed, and the patient is cured.

## POST-OPERATIVE TETANY.*

J. MOREHEAD EMMETT, M. D., Clifton Forge, Va.

The subject of thyroid surgery has received great attention in literature in recent years. It is surprising, however, to find how scant is this literature concerning the complication of injuries to the parathyroid bodies during thyroid surgery. This phenomena may be explained by the relative infrequency of the occurrence of this complication. It would seem, however, that the severity of the symptoms manifested in some of these patients should serve to stimulate a material interest in the subject by men associated with thyroid surgery.

Parathyroid tetany may be, for convenience, grouped into three general classes, according to the severity of the symptoms. In the first group, we find the great preponderance of cases. The symptoms are relatively transitory in these patients. They ordinarily appear soon after operation with the patients complaining of stiffness of the muscles of their

*Read before the sixty-third annual session of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

hands or feet, occasionally a little tingling in their hands and feet, and they have a tendency to have their hands and feet to feel as though they are asleep. This picture is not alarming and ordinarily clears up within twenty-four hours without any treatment whatsoever.

In the second group will be found the patients who have sustained apparently injuries to all the parathyroid bodies and they present an alarming and distressing syndrome. Soon after operation this group of patients develop spasms of the muscles of the extremities, of the neck, and frequently spasms of the muscles of the larynx. Some of these patients with violent manifestations of their disease are not relieved by any form of treatment, and death only relieves them of their unfortunate state. Fortunately, a relatively small percentage of parathyroid tetany falls in this group.

In the third group will be found patients who have gone through the initial acute parathyroid tetany, but whose symptoms do not clear up completely. They develop a constant calcium deficiency which is manifested by a blood calcium of ordinarily below 7 mgms. These patients require calcium therapy for a long period of time, and occasionally indefinitely. A small percentage of this group of patients seem to eventually acclimate themselves to a low calcium content and they may ultimately not require treatment. This group of patients present actually the chronic state of parathyroid deficiency.

With the development of thyroid surgery, there has been a gradual tendency on the part of surgeons for the past few years to remove more and more thyroid tissue; first, because it has been determined that a too limited operation frequently fails to accomplish a cure of the hyperthyroid state, and, second, in those cases where there is a superabundance of thyroid tissue left there is often a recurrence of the hyperthyroidism particularly in patients who have hyperplastic goiters. It has been said that those surgeons who practice more radical thyroid surgery may anticipate a greater number of injuries to the parathyroids. This assertion does not explain satisfactorily to me the operative complications, when one considers the embryological variation in the size, structure and location of the parathyroid bodies. It is felt that the parathyroids are rather constant as to numbers, but there is great variation in their location. From their point of origin from the third and fourth pharyngeal pouches they follow the cervical structures so that the pair arising from the fourth pouch will be found in direct relationship with the upper portion of the thyroid gland at the posterior or mesial aspect of the superior pole. The pair from the third pouch descend lower and are usually found on the posterior or lateral aspect of the inferior pole. The upper pair of glands may be ordinarily identified just under and to the inside of the superficial branch of the artery to the superior pole or between the pole and the trachea on the posterior surface. The lower pair are frequently found just under the middle vein, near the posterior surface of the gland. Because in the hyperplastic or exophthalmic goiters there is a symmetrical enlargement of the thyroid gland, there is little danger of injuring or removing the parathyroid bodies at operation. In the adenomatous goiters, which are irregularly enlarged and particularly that group which are substernal, the location of the parathyroid bodies varies very considerably, due to the distortion of the adjacent structures. The injuries which have been most frequently reported have occurred following the second operation for the recurrence of toxic symptoms, when the first operation has not resulted in a cure of the hyperthyroidism.

The appearance of the parathyroid bodies varies much in shape and in size. The ordinary description of a kidney-shaped glandular structure about as large as a small bean is somewhat misleading. Some of these little bodies are oval in shape and others are long and have the general appearance of a strand of fatty or fibrinous tissue, while others are buried in globules of areola tissue. It may be said, however, that, when the parathyroid structure is actually seen, it is grayish brown in appearance, it is separated by a stroma of loose areola tissue which has a separate blood supply from that of the thyroid structure.

In a personal communication from Dr. Richard B. Cattell, of the Lahey Clinic, in Boston, I am advised that they have been able to avoid parathyroid injuries in all but three cases out of the last 6,000 operations which have been done upon the thyroid gland at the Lahey Clinic. In each of these three injuries the complication has resulted from a secondary operation. In this clinic, in Boston, very constructive work has been done upon the mechanical avoidance of injuries to the parathyroids during thyroid surgery. Great em-

phasis has been put upon adequate operative exposure for the complete enucleation of thyroid tissue and proper observation of the related structures. They feel that it is of importance to attempt to identify the parathyroid bodies whenever possible and, when these bodies have been unavoidably removed or injured, they have been successfully transplanted into the belly of the sterno-mastoid muscle.

An interesting observation made by Dr. Cattell is that, in a minute study of 200 thyroid glands removed, he was able to ascertain in fourteen cases, or 7 per cent, there had been removed one or more parathyroid bodies. Many years ago Dr. Halstead proved experimentally that one parathyroid uninjured was sufficient to avoid parathyroid tetany.

There have been many conflicting ideas as to the actual cause of parathyroid tetany. It is generally felt now that the cases presenting transient symptoms are due to operative interference with the blood supply to the parathyroids or to over-manipulation of these structures and, possibly, to the accumulation of blood and serum in the operative wounds, along with, occasionally, the too tight application of a bandage to the neck. I assume that, some times when one or more parathyroid bodies are removed at operation, it requires some little time for the human physiology to acclimate itself to this new parathyroid deficiency.

The immediate treatment of parathyroid tetany frequently finds us inadequately prepared to take care of the emergency and, when the cases presenting violent symptoms do require treatment, immediate relief is required. Calcium lactate and calcium chloride, dosage 40 to 50 grains by mouth every four hours, ordinarily supply sufficient calcium to take care of that deficiency which results from parathyroid disturbance. Later the dosage may be diminished. In an emergency, when the tetanic seizures are violent and alarming, a solution of calcium chloride or calcium lactate given intravenously will relieve the muscular spasm. Viosterol and irradiated cholesterol have been employed in dosage of from three to six drops, twice daily, inasmuch as it is thought that they enable the body to utilize the calcium with greater efficiency. In our own case calcium chloride was given both by mouth and intravenously. For a few days parathormone was also given intramuscularly. It was found that, when parathormone was given, the dosage of calcium could be very much diminished. In many patients a high caloric diet with the use of certain foodstuffs, such as milk, which has a large amount of lactose, is of value.

It is, of course, very important that this state of calcium deficiency should not be allowed to remain present over a long period of time, since cataracts in the lenses are very prone to result from this deficiency. The only reliable barometer as to the calcium content in the blood is frequent estimations. So long as the calcium chloride is kept above 8 mgms., it is thought degenerative changes from calcium deficiency will not occur, and, of course, the tetanic seizures will not occur. When it is not possible to get the calcium estimates at frequent intervals, then repeated clinical tests, such as Chvostek and Trousseau's signs, may be relied upon.

*Case 1.* W. M. J., male, white, age 31, referred by Dr. J. V. Jordan, Covington, Va., on March 12, 1929.

This man had typical clinical manifestations of a hyperplastic or exophthalmic goiter with a basal metabolic rate of plus 80. He was given iodine in the form of Lugol's solution, and a primary sub-total thyroidectomy was done upon him on March 25, 1929.

He remained perfectly well until the early part of July, 1931, when he returned to us with the same picture of hyperthyroidism. There could be felt at that time a little fullness in his neck, particularly over the region of the upper poles. He was again given iodine therapy and on August 7, 1931, we removed a considerable amount of thyroid tissue, which was found to be located near the upper poles, immediately against the posterior capsule which had been left intact at the primary operation. His operative recovery was again satisfactory, and he was discharged from the hospital on August 12, 1931.

The patient advised that on August 20, 1931, he began to feel a little numbness in his fingers and toes. On August 23, 1931, while he was driving his car, he suddenly developed tonic spasms of the muscles of both arms and a great retraction of the muscles of his neck. He was unable to swallow and his breathing was difficult. He was rushed to the hospital and we gave him 30 grs. of calcium lactate dissolved in 20 c.c. of distilled water. His muscular spasms began to subside before the intravenous therapy was even completed. Within five minutes after the intravenous calcium lactate was given he was completely relaxed, but greatly exhausted. About eighteen hours later he had a general recurrence of his muscular spasms and the same treatment was repeated. On August 25th, his blood calcium was 8.5 mgms. Calcium lactate was given by mouth three times daily and one dose of 30 grs. of calcium lactate was given, dissolved in 20 c.c. of distilled water each day intravenously. On the sixth day after his spasms began he was given an ampoule of parathormone subcutaneously. His calcium lactate was discontinued intravenously and the oral administration was reduced to 20 grs. three times a day. Weekly estimates of his blood calcium showed that he had a constant diminution of his calcium content, varying from 7.3 to 7.8 mgms. At the end of two months he was getting only one dose of calcium lactate, grs. 30 daily, and all other treatment was withdrawn, except that he was encouraged to drink

large quantities of milk. At the end of a three months' period his calcium content was found to be 10.2 mgms. All his calcium therapy was withdrawn, and he was symptom free.

This patient was last seen on August 21, 1932, at which time he was relieved of his hyperthyroidism and of his parathyroid disturbance.


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### Discussion

Dr. James H. Smith, *Richmond:* As Dr. Emmett has pointed out, the subject of tetany following surgery of the thyroid gland is important, not so much on account of its frequency as because of the urgent need to recognize it when it occurs and promptly to apply appropriate treatment. He himself has observed the incidence of only one case in some six or seven hundred operations on the gland, and he quotes an incidence of only three cases in some six thousand thyroid operations in a Boston clinic. I have been in rather close association for some years with thyroid surgery, and do not recall ever having seen the condition develop post-operatively. I think, therefore, that Dr. Emmett is quite correct in emphasizing the importance of the condition on the basis of the importance of treatment rather than of frequency.

I recall a case, very severe, of cachexia strumipriva, due to the fact that the condition of the patient on the operating table was so desperate that the situation did not permit the delicacy in technic which should have been observed. That girl, after operation, was quite dependent upon the administration of thyroid extract, but at no time did she show signs of tetany.

Rather than review or re-emphasize any of the points Dr. Emmett has so well made, I shall take the liberty very briefly to refer to tetany in connection with surgery on a different part of the anatomy. I refer to so-called gastric tetany, the tetany which occurs with pyloric stenosis or obstruction in the upper part of the intestinal tract. I think it is well to call attention to this type of tetany, because there is a difference not only in the etiology but also a difference in the treatment. When there is a case of pyloric stenosis, or obstruction high in the intestinal tract, with clinical tetany developing, we do not expect to find a decrease in blood calcium, as described by Dr. Emmett. There is an error in calcium metabolism, but rather than an error in the amount of the total calcium, there is an error in the ionized calcium, or in the proportion of diffusible to nondiffusible calcium. Now, that calcium error arises because there has developed an alkalosis, an increased content of calcium, sodium, and carbon dioxid—an alkalosis which, in turn, has developed as a sequel of decreased chlorid content of the blood. And that decreased chlorid content is usually due to the fact that the vomiting on the part of the patient has decreased the chlorid supply over a considerable period. Now, those things being true, the emphasis rather belongs on the need to replace the lost chlorids. There are perhaps three chief agents by which we attempt to do this—hydrochloric acid, sodium chlorid, and ammonium chlorid. If the condition of the patient's stomach will permit the administration of hydrochloric acid, that is an easy way to replace them; but so often the stomach will not tolerate the oral administration of any remedy. Under those conditions, the various routes by which sodium chlorid may be administered are too familiar to need mention. I have seen recommended the use of ammonium chlorid intravenously. Personally I have never undertaken it. It may be given by proctolysis. The references to its use call attention to the possibility of hemolysis.

Dr. Emmett, closing the discussion: Mr. Chairman, my reason for reading this paper and reporting this case was occasioned by the concern which I felt when I was brought face to face with a case of tetany following thyroid surgery. The picture is a truly alarming one, and, although its occurrence is rare, the unhappy state of such a patient created great concern in my mind.

The record of injuries to the parathyroid bodies during thyroid surgery is impressively scarce. Practically all the cases which have been reported have occurred in patients who have been operated upon for recurrent hyperplastic goiters. This phenomena is probably explained by the disturbed anatomical landmarks resulting from scar tissue. The constructive work which has been done at the Lahey Clinic upon the conservation of the parathyroid bodies during thyroid surgery is a matter of great interest. It is probable that, with a little more attention paid to the identification of these bodies, we might entirely eliminate injuries to the parathyroids as a complication of thyroid surgery.

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## PRIMARY TUBERCULOSIS OF THE TONSILS—THE REPORT OF A CASE, COMPLICATED BY EXTENSION TO THE PHARYNX AND SOFT PALATE.*

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Tuberculosis of the tonsils may be divided into two major groups: I. *Primary*, called exogenous by Grunwald, which may be considered as embracing all those cases presenting no demonstrable evidence of clinical tuberculosis elsewhere in the body. II. *Secondary*, endogenous tonsil tuberculosis includes those cases associated with clinical pulmonary tuberculosis. The former is purely an arbitrary classification, and ignores the possibility of hematogenous infections.

The secondary type has been known for a long time and is far more frequent than primary tonsillar tuberculosis. Tubercles may be found in the tonsils of nearly all patients with advanced pulmonary tuberculosis. The earliest reference to the primary type, with a well authenticated case, was presented by Orth,[1] in 1887. He found characteristic microscopic lesions in children dying from diphtheria, and having no other evidence of tuberculosis elsewhere in the body. Since this time, many ob-

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servations have been recorded and much data accumulated.[2]

Tuberculosis of the soft palate and pharynx might also be considered as *primary* when associated with the primary tonsil lesion, or when found in patients in whom no other active tuberculous lesions can be demonstrated. It is probable that all of these cases originate by extension from tonsil infection. The *secondary* type is only encountered in cases of terminal pulmonary tuberculosis. One per cent of hospital phthisis cases are complicated by lesions of the soft palate and pharynx.

Wilson Lambert,[3] Fairlee Clarke,[4] and Kessler, each reported a case of apparent primary tuberculosis of the palate and pharynx, and Kussner[5] collected four others. After rather careful survey of the literature available in the Surgeon General's Library, and that of the American College of Surgeons Package Library, I have been able to find only three other reports of the primary palatine and pharyngeal lesions,—one by Barbier,[6] and two by Kowler.[7] While the possibility of error in this survey is admitted, it seems justifiable to state that primary lesions in these structures are extremely rare.

Crowe[8] found primary tuberculosis of the tonsils and adenoids in 4.18 per cent of a series of 3,260 tonsillectomies and adenoidectomies. Forty-eight per cent of the cases showing enlargement of the cervical lymph nodes had tuberculosis of the tonsils.

These figures agree with other studies of large series of cases, such as those presented by Mullen,[9] Fischer,[10] Cornell,[11] Weller,[12] and others,[13,14] in this country and Europe. These series are composed of about fifteen thousand cases, studied between 1923 and 1927, and no ulcerative lesions of the palate and pharynx were encountered.

## Anatomy

Wood[15] has worked out the lymphatics of the pharynx and tonsils very carefully and his work is freely quoted here.

The *nasopharynx*, with its adenoid mass, is richly supplied with blood through the anastamosis of the Vidian and pterygopalatine arteries with the ascending pharyngeal; its veins emptying into the pterygoid plexus.

The nasopharyngeal vault is provided with a network of lymph vessels, which drain either into the posterior, deep cervical glands, or the retropharyngeal nodes, which lie on either side of the midline between the mucosa and the aponeurosis over the bodies of the second and third cervical vertebrae. Thus, the pharynx, Eustachian tube and middle ear are drained.

The *oropharynx* contains the palatine tonsils, which resemble ordinary lymph glands in that they are composed of lymphatic cells with follicles or germinal centers. They differ from lymph nodes, however, in having only efferent lymph channels and no medullary sinus. The crypts are formed embryologically by in-growths of stratified squamous epithelium, (whose cores become desquamated, thus forming the lumen) There is no sub-epithelial layer lining the crypts, and they extend completely through the tonsil, ending blindly at the fibrous capsule. Any interference with the drainage of the crypts predisposes to tonsil infection.

The efferent tonsil lymphatics have been traced to a gland belonging to the deep cervical chain and lying just beneath the anterior border of the sterno-cleido-mastoid muscle where it is crossed by the anterior belly of the digastric. When enlarged, it presents at the angle of the mandible. This gland drains into a group of collecting nodes, forming a collar about the upper part of the neck. This group is made up of the occipital, post-auricular, parotid group, submaxillary group, submental and retro-pharyngeal nodes. These, in turn, drain into the anterior and posterior chain of glands, which are on both sides of the neck, along the anterior and posterior borders of the sternomastoid muscle. These chains meet at a common gland just below the mastoid tip, and extend downward as an inverted "V."[22] These lymphatics enter the veins by the thoracic duct on the left side and the ductus lymphaticus on the right.

## Immunology

From the relative infrequency of primary tuberculosis of the tonsils, and the extreme rarity of such a lesion of the soft palate and pharynx, it seems feasible to assume that these structures are endowed with relatively great resistence to tuberculous infection. In view of Von Behring's[16] statement that 96 per cent of adults of thirty years of age have tuberculous lesions, it is surprising that these structures are so infrequently affected.

The intact stratified squamous epithelium of the tonsils, soft palate and pharynx, forms an efficient barrier to the tubercle bacillus. When injured by foreign bodies, such as toothbrush

bristles, rough foods, operative procedures, ulcers, etc., the barrier becomes less efficient. Irritants, syphilis, inflammations, such as tonsillitis, thrush, pyorrhea, etc. predispose to infections.

The leukocytes so prevalent in these structures which are rich in lymphatics, destroy great numbers of bacteria. The saliva covers the bacillus, and, besides some inherent antiseptic properties, mechanically prevents intimate contact with the mucosa. The intruder is thus incorporated in the salivary stream and either swallowed or expectorated.

The number of tubercle bacilli to which one is exposed, their virulence, the general health and resistence of the host, are other factors in the battle against infection. Thus, persons living in homes with careless tubercular patients, about sanitaria, and workers in laboratories, should be more likely to come into intimate contact with the tubercle bacillus.

### Pathology

It has been demonstrated that, by gently rubbing cultures of tubercle bacilli, or infected sputum, into the buccal mucosa of animals, care being taken not to abrade the surface, no lesion will occur. However, in these cases, involvement of the cervical nodes has been demonstrated. In case the surface of the mucous membrane is broken, ulceration will occur with concurrent cervical adenitis.[17] It has been definitely established that tubercle bacilli may penetrate the tonsil mucosa without leaving any gross or microscopic evidence locally; then may lodge in the adjacent cervical lymph nodes and there cause tuberculous adenitis, or lie dormant and later may cause infection, locally, or in the blood stream.[22]

The mouth and nose are the first stadia of all tuberculous infections, and, therefore, the portal of entry for all cases except those rare traumatic ones. The two major modes of infection are: I. Inhalation of dust, particularly house dust infected by sputum. II. Ingestion probably plays the major role in infection of the tonsil with the tubercle bacillus. Infected foods, fingers, toys, carry great numbers of bacilli into the mouths of children, who spend most of their early years playing on floors, which might readily be infected by shoes, sneezing, coughing, etc. Infected cows play a great part in the etiology of tonsil tuberculosis, as evidenced by the fact that in Edinburgh, where milk was not pasteurized, 38 per cent of the tonsils removed showed evidences of tuberculous infections, and 20 per cent of the source of milk supply contained tubercle bacilli.[18]

The typical tubercle is a nonvascular structure, which receives its nourishment from surrounding tissues. It consists of a central area of necrosis, surrounded by massed lymphocytes. There are numerous giant or epithelioid cells, and the necrotic center is made up of lymphocytes, tubercle bacilli, and debris, in varying stages of necrosis.

In tuberculosis of the tonsils, three types of infection have been recorded, and it is striking that nearly all apparently begin at the upper pole. I. Crypt infections, starting beneath the mucosa, near the bottom of the crypt. II. Tuberculous ulcerations, or the lupoid form, first attacks the submucosa, with the formation of tubercles. The overlying structures slough, due to interference with nutrition, leaving dirty ulcers with undermined and irregular edges. This picture also represents the process which takes place in the pharynx and soft palate, and is practically always found in terminal tuberculosis. The palatine and pharyngeal lesions are probably always secondary to tonsil tuberculosis, but the ulcers are not necessarily extensions from ulcers of the tonsils. They seem to be due to new areas of necrosis over the tubercles in these structures. III. Multiple intrafollicular infections due to blood stream infection (miliary).

Park and Krumwiede[19] have shown that 61 per cent of tuberculous adenitis cases in children of under five years of age are the results of infection with the bovine type of bacillus.

At this point, I wish to call attention to the gland that is situated just beneath the aponeurosis of the lateral pharyngeal muscles, at the extreme apex of the tonsil fossa. In cases where the tonsil infection is very pronounced, this node is frequently so large as to present into the apex of the tonsil fossa, just beneath the anterior pillar. It is very difficult to always determine how much of this tissue should be removed, and frequently its efferent vessels can be traced deeply into lateral pharyngeal muscles.

Retropharyngeal abscesses of tubercular origin are very infrequent, but, when they occur, are usually the result of caseation and breaking down of the retropharyngeal nodes.

### Symptoms and Signs

There is nothing characteristic in the symptoms or signs presented by tuberculosis of the tonsils. Usually the diagnosis is made only after sections have been made of the removed tonsils. The most pronounced symptom is dysphagia, which is frequently so marked as to cause great cachexia from the inability to swallow food. The neck is stiff and sore, due to the adenitis, and there is marked malaise, anorexia, and prostration. It is not unusual to note an afternoon temperature of from 99 to 100 degrees.

The signs are those of any acute exacerbation of a chronic throat infection. The tonsils are hypertrophied, and bands of fibrous tissue, which run irregularly over the tonsil, may be noted. The crypts may or may not be closed, and, on expression, pus or straw colored fluid may be discharged. Usually ulceration cannot be noted, or, at least, is overlooked. The tonsil is fibrous and hard to the feel by instrumentation, and, on gagging, shows deep embedding. The glands of the neck are tender, vary in size, and may be discreet or coalescent.

The pillars are usually congested and adhesions to tonsils may occur. The pharynx usually shows a marked granular pharyngitis. The symptoms may entirely subside between acute attacks, and present only hypertrophied tonsils, granular pharyngitis and cervical adenitis.

### Diagnosis

Unless ulcerations are seen, which is rare, there is nothing in the gross appearance to differentiate tuberculous from other tonsil infections. It occurs most frequently in children, especially of the negro race, without preference being shown to either sex.

Usually the diagnosis is made by the microscopical study of tissue sections, in which typical tubercles are found in the tonsil tissue. The danger of confusing pseudo-tubercles, resulting from foreign bodies, seems to be very small, for the foreign body, or the vacuole left as the result of its being dissolved by fixing fluids, can be demonstrated.[21]

Animal inoculation is a reliable diagnostic aid, but mixed infections frequently kill the guinea pig quickly, thus obscuring the tuberculous lesions.

The tuberculin test, when positive, presenting local, focal, and general reactions, is pathognomonic, but with only local and general reactions is of little value.

The pharyngeal and palatine ulcers, especially when the latter is associated with perforation, must, by biopsy demonstration of tubercle bacilli, or spirochete in scrapings, and serology, be distinguished from syphilis. In these cases, the symptom of extreme dysphagia is out of all proportion to the tonsil appearance.

### Prognosis

There seems to be no cause for alarm in cases in which tubercles are found in the tonsils, as healing usually differs in no way from that of removal of the ordinarily infected tonsils. Tonsillectomy usually relieves the cervical adenitis, as shown by Fischer's series, in which there were 57 per cent cures after five years. These cases should be watched for a long time, however, as tuberculosis in other parts of the body frequently occurs. Though rare, the possibility of extension of ulcerative processes to the palate and pharynx should be borne in mind.

In cases of pulmonary tuberculosis, complicated by pharyngeal and palatine ulcers, the prognosis is not good. In the primary type of ulcerations the prognosis should be very guarded.

### Treatment

Removal of the tonsils is indicated, and these cases should be encouraged to eat and drink a diet of high caloric content, even if the pain in swallowing is great. They should be kept in bed longer than usually required, and every effort to keep up their weight should be resorted to. Tonics and blood stimulating drugs, such as sodium cacodylate and iron should be given early in those cases presenting marked secondary anemia. They should be encouraged to get sufficient rest, and should be observed over a long period of time, after operation.

When healing is sluggish and ulcerations are present, tube feeding may combat the cachexia due to dysphagia. Cod liver oil and heliotherapy are also of value in these cases, but when ulceration of the palate and pharynx occurs, the spreading of ulcers is controlled only by electro-coagulation or the actual cautery. Tuberculin therapy, X-ray and heliotherapy are of questionable value in treating the ulcers, but should be tried.

Case Report

N. B., an unmarried female, 19 years of age, whose occupation is housework, consulted me on May 11, 1928.

*Complaint:* "Sore throat."

*Family History:* Unimportant, with no history of tuberculosis.

*Past History:* Past general health good, except for sore throat. Usual childhood infections, with uneventful recoveries.

*Eyes:* Negative, except for strain after close work.

*Nose and Ears:* Negative.

*Throat:* Has had sore throats and tonsillitis frequently since early childhood. Attacks occurred frequently, and were attended by fever, malaise and occasional chills. The patient felt well between attacks, although one would frequently follow on the heels of another. She has always been susceptible to colds, which usually precede and aggravate the sore throat, but has never had quinsy. While there has been no aphonia, she has always had a hoarse voice.

*Glands:* Enlargement of cervical glands has always been present, but these become very tender and swollen, causing "stiff neck" during attacks of tonsillitis. These glands never ruptured nor were they ever drained surgically; between attacks they subside and soreness disappears. The thyroid has been enlarged since four or five years of age, and at times causes pressure symptoms, which are worse about menstrual time.

*Heart:* Negative, except for occasional palpitation.

*Lungs:* No cough or expectoration except with colds. No hemoptysis, night sweats, or pains in chest. There have been no periods of marked loss of weight, and lassitude is present only during attacks of tonsillitis. Greatest weight 160 pounds, but usually weighs 140.

*Gastro-Intestinal:* Negative.

*Genito-Urinary:* Negative. Patient denies rash or genital sore, but admits exposure. Menstrual history unimportant.

*Extremities:* Has had sore, stiff joints, but no acute rheumatism. Muscles and joints ache during attacks of sore throat.

*Present Illness:* For several weeks patient has had sore throat, and this attack differs in no way from those of early childhood. Her tonsils are swollen, and swallowing is very painful, so that only liquids have been taken for several days. This symptom, of marked dysphagia, drove patient to seek aid. Her throat has had no spots or ulcers on it, but she thinks she has had some fever. There has been much aching of the joints and general malaise, and most of the past week has been spent in bed. The glands of her neck are very tender and sore, and turning the head causes pain. Patient has not had a chill, night sweat, cough or expectoration, and while there has been no aphonia, her voice has been hoarser than usual. She feels generally miserable, and all physical exertion is an effort.

*Physical Examination:* (Only the positive findings will be noted here, except in the case of the throat and lungs.)

Patient is a well developed young white girl, without evidence of deformity or muscle atrophy.

*Head, Eyes, Ears:* Negative.

*Nose:* Moderate turgescence.

*Sinuses:* Illuminate normally and X-ray negative.

*Teeth and Gums:* Negative.

*Throat:* Pillars congested, and pharynx inflamed, having many red and swollen plaques of lymphoid tissue, particularly just behind the posterior pillars and running into nasopharynx. There is no discharge in pharynx or nasopharynx. Both tonsils are about 3x3 cm. and extend well towards the midline of the orapharynx. They are hypertrophied and present wide, fibrous bands, running irregularly on their surfaces. The crypts are numerous, but there are no spots or membranes present. On expression, each tonsil feels firm and fibrous, and some dirty, straw colored fluid exudes from crypts. On gagging, the base shows itself deeply embedded in pharyngeal wall. There is very little pus or concretions, and, on the whole, the picture does not seem compatible with the great dysphagia complained of.

*Cervical Glands:* The anterior and posterior chains are enlarged and the tonsil gland is about 1 cm. in diameter. These nodes throughout are tender, and vary in size and shape. Some are firm and others doughy, and while there is some matting together, they are mostly discreet. No fluctuation is present. The right lobe of the thyroid is about 8 cm. in diameter, freely movable and smooth.

*Heart:* Pulse 64 per minute, and otherwise

negative except for accentuation of pulmonic second.

*Lungs:* Respiration 16 per minute, and temperature 99.2 degrees. Examinations, both physical and X-ray, were made by Dr. Frank Stafford, of the Blue Ridge Sanatorium, at Charlottesville, Va., on August 3, 1928, and November 13, 1929. Stereoscopic X-ray plates were again taken September 11, 1930, and examined. The physical examination was entirely negative. The conclusions, drawn from the X-ray plates were: "There are some abnormal findings in both hila regions and the apical trunks are too heavy to be normal. These, however, do not justify a diagnosis of clinical tuberculosis from an X-ray standpoint."

*Abdomen:* Negative.

*Reflexes:* Normal.

### Notes

For a period of about six weeks, this patient was treated at frequent intervals by sprays, gargles, and local applications. Finally, the inflammation subsided, swallowing became comfortable, and, after the report of a negative blood Kahn test two days beforehand, the tonsils and adenoids were removed. The operation was performed by dissection, under ether anesthesia, on June 22, 1928.

The capsule separated readily, except at upper pole of each tonsil, where no capsule could be demonstrated. At this point the tonsil tissue seemed to extend into the pharyngeal wall, as evidenced by a lymphoid projection at the extreme apex of the tonsil fossa, just beneath the anterior pillar. As much of this tissue was removed as was deemed advisable, but even then it seemed questionable that the tonsils were cleanly removed. The bleeding was profuse from both fossae, and was controlled only after many sutures were applied. In fact, the points of insertion of the needle would bleed freely, and it was necessary to almost entirely sew up the fossae. The actual operating time was one hour, and the patient reacted poorly to the anesthetic. She became cyanotic, ceased to breathe, and the pulse became too thready to count. Treatment for shock soon corrected this.

The patient remained in the hospital only two days, and during this time the highest temperature was 101 degrees, which was shortly after the operation. It was 99 degrees on departing in the afternoon. The throat was badly swollen, and there was marked ecchymosis, extending over soft palate. Due to soreness of her throat, the patient refused nearly all nourishment.

Due to appearances of the tonsils, and the profuse hemorrhage, sections were made from them for microscopic study, and the following report was received from the Department of Pathology, of the University of Virginia: "Sections show chronic tuberculous inflammation, with hypertrophy. There are many tubercles, some of which show typical giant cells. Diagnosis: Tuberculosis of lymphoid tissue."

About fifteen pounds of weight were lost and much of this was due to inability to force nourishment by mouth. Otherwise, convalescence seemed to progress favorably, except that healing seemed slower than usual. The throat was treated regularly for about sixteen days, and then nothing was seen of the patient for two weeks.

Five weeks after operation, she consulted me because of continued and increasing sore throat. She presented a picture of cachexia and prostration. There was granulation tissue in the fossae, and this and part of pharynx was covered with a dirty, ropy exudate. Just behind the posterior pillars, on both sides of the pharynx, an irregularly shaped, dirty yellow patch was seen (July 9th to July 23rd). When this exudate was removed, it left unhealthy, pale, worm eaten, ulcers, about 1 cm. long. Their borders were undermined, irregular, and their centers were covered with yellowish, watery granulation. Two days later three similar patches were seen on the solt palate, just to the left of the midline, and about 1½ cm. from the junction of the anterior and posterior pillars. These coalesced and produced a perforation of the palate, about 1 cm. in diameter.

In spite of another negative Kahn test, .6 mg. of neosalvarsan (July 27th) was given—after taking blood for a Wassermann test. This blood was reported negative, and no effect at all was noted from this therapeutic measure.

The ulcers continued to spread by contiguity, and by outcrops in new portion of the pharynx and palate, with apparently healthy tissue between. The anterior and posterior pillars, as well as the pharyngeal wall and palate on both sides, had many ulcerated areas, varying in size. The larger ones were formed from the

coalescence of several smaller ulcers. Their margins were irregular and undermined, and they were covered with exudate. There was little evidence of healthy granulation. The margin of the perforation in the palate was ulcerated and continued to encroach on surrounding tissue, until it was about 2 cm. in diameter. The nasopharynx was exposed to view, and presented a picture of dirty exudate, covering the inflamed vault. While there were no discreet ulcers in the nasopharynx, those of the orapharynx extended well up into it on either side. Phonation and deglutition were greatly interfered with by the perforation, and dysphagia was extreme.

The sputum had been examined at intervals on four occasions and was reported negative for tubercle bacilli. Seven weeks after the operation (August 13, 1928), a series of twenty-one therapeutic doses of "old tuberculin" were given over a period of two months. The doses ranged from .00001 mg. to 5 mg., and presented several local reactions. There was no improvement noted from this or other therapeutic agents, such as iodides, mercury, neosalvarsan, and local applications. Constitutional treatment, including rest, forced feeding, Alpine lamp, and improvement of living conditions were used, but the actual cautery seemed the only measure capable of arresting the rapidly necrosing process.

Two months after the operation, another blood Wassermann test was reported negative.

Throughout this course there was no evidence of any involvement of the larynx. The pharyngeal and palatine lesions showed periods of quiescence and exacerbation over the next six months. The process was held in check by use of the actual cautery, and the patient was thereby kept reasonably comfortable.

On February 4, 1929 (eight and one-half months after tonsillectomy), the patient consulted me because of dysphagia and a mechanical obstruction to swallowing. The socket of a tooth removed several weeks before had not healed, and the patient had been without food for several days, because even fluids passed the pharynx with great difficulty. A rounded, smooth swelling protruded from the posterior wall of the pharynx and extended downward, to the right of the midline, to a point just above the larynx. There was no inflammation about this swelling, and it was soft, doughy, and only slightly tender to touch. There was a profusion of scarred areas over the entire pharynx, resulting from healed ulcers, and there were other areas of new ulceration.

One week after this mass appeared, .1 mg. of O. T. was given subcutaneously, and forty-eight hours later there was a local reaction, about 2 cm. in diameter, at site of infection. There was also a marked inflammatory reaction noted about scars of pharynx, new ulcers and the retro-pharyngeal mass. General malaise and a temperature of 100 degrees was noted.

A portion of the tissue over the retro-pharyngeal abscess sloughed in time, exposing the thick caseous contents. A portion of this abscess wall was removed by the actual cautery and microscopic examination by the University of Virginia Department of Pathology revealed: "Marked chronic tuberculous inflammation of lymphoid tissue, with many caseous areas. The mucous membrane is normal, except in one area, which is apparently ulcerated."

The ulcerating process about the abscess wall extended well down toward the larynx, but was checked by cauterization before this organ was damaged. The arytenoids were red and swollen and there was more hoarseness. This flare-up was quieted and the patient was lost sight of for some time.

In June, 1929, in spite of warnings, the patient was married. A few months after this (October 10, 1929) she presented herself for treatment again. She weighed only 114 pounds, and was the picture of profound toxemia and prostration. Her face was flushed; her temperature was 101.8 degrees, and the cervical glands were again swollen and tender. Her throat showed great distortion from scar tissue traction, and new ulcerations were present. The arytenoids were again inflamed, but no ulceration was observed in the larynx.

The patient's condition was alarming and she was accepted as a patient by the Blue Ridge Sanatorium, November 5, 1929. She remained in the sanatorium only three days, because of homesickness, but the institutional staff was able to accumulate the following data:

Physical examination, including lungs, negative, except for enlargement of the thyroid, and presence of throat lesions. X-ray examination of the chest revealed nothing different from first stereoscopic plates.

Pulse, 70 per minute; respiration, 20 per

minute. The temperature ranged from normal to 99.2 degrees in the afternoon.

Urinalysis, negative, except for numerous pus cells.

Feces, negative.

Stain for Vincent's, negative.

Sputum, positive, twice—Gaffehy, II and III.

Tuberculin test with .1 mg. O. T., negative.

Blood Wassermann, 4 plus, and this was verified by a 4 plus Kahn test one month later.

Treatment for syphilis was refused, and nothing more was heard from the patient until September 18, 1930, twenty-eight months after the tonsillectomy. She presented herself, after many requests, for observation. She feels well, does all her own work, has had no sore throat since shortly after returning from sanatorium. Her weight is 138 pounds. She looks well and her pharynx is entirely healed by scar tissue, with great distortion of pillars, and the soft palate. The palate retains its large perforation, about 2 cm., and a small one, about 1 mm., in diameter. The uvula is pulled to the left side, but no unhealed ulcers are present. The larynx is normal and the cervical glands are palpable, but comparatively small.

The following laboratory reports were obtained at this last visit:

Stereoscopic chest plates, unchanged from last X-ray examination in November, 1929.

The sputum was negative for tubercle bacilli.

Urinalysis, negative, except for an occasional leukocyte.

Hemoglobin, 70 per cent, by Dahli method.

White cell count, 12,600. Red cells, 3,140,000.

Lymphocytes, 48 per cent and neutrophiles, 52 per cent.

One blood Wassermann, and one Kahn test were negative, but one Wassermann was 2 plus.

## Summary

I. The preponderance of evidence is in favor of the fact that primary or exogenous tuberculous infections of the tonsils do occur. About 4.2 per cent of all tonsils removed show microscopic evidence of tuberculosis.

II. In nearly all of these cases the cervical lymph nodes are infected, secondary to the tonsils. Tubercle bacilli can pass through the tonsils to the cervical glands and leave no evidence of the disease in the tonsils.

III. Tonsil tuberculosis is probably nearly always due to the ingestion of the organism, rather than air-borne.

IV. The infections are usually at the upper pole of the tonsil and extend into the cervical chain by lymphatics situated in the lateral wall at the apex of the fossa. This fact renders it difficult at times to be sure that the tonsil has been cleanly removed, particularly in severe infections, where there is an apparent dehiscence of the fibrous capsule.

V. Tuberculous tonsils should be removed, as they nearly always heal normally, but the possibility of ulcerative extensions to the adjacent tissues should be borne in mind.

VI. Tuberculin, heliotherapy, and X-ray should be used in conjunction with constructive measures, but the actual cautery seems best for local control of the ulcers.

VII. A case of apparently exogenous tuberculous infection of the tonsils, complicated by ulcerations of the soft palate and pharynx, has been reported.

VIII. This case presented two negative blood Kahn, one blood Wassermann and the therapeutic tests for syphilis. She was married, and in a few months two 4 plus blood Wassermann tests were reported. In view of these tests, two positive sputum tests, a positive tuberculin, and two biopsies, showing typical tuberculous lesions, it seems rational to assume that the syphilis was acquired by marriage.

IX. After two years this patient presents a picture of an entirely healed throat, without tuberculosis elsewhere in the body. By the great improvement, following infestion with syphilis, some intimation of the possible antagonistic symbiosis of the two diseases in this case is suggested.

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## CAN INTESTINAL ADHESIONS BE DELAYED?*

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This discussion is confined to those cases where drainage materials are used.

If the question is put up to the average surgeon he will without hesitation reply, "No!"—that such adhesions will form in a few hours around any form of drainage material and promptly stop the drainage.

Investigation shows, however, that these same surgeons are unconsciously making free and increasing use of the very procedure that does delay adhesions. They are getting more and more fluid into the circulation of the patients, and, as we will demonstrate, this positively does put off the agglutination of the peritoneal surfaces for a length of time depending on the amount of fluid administered and absorbed.

The average case of ruptured appendicitis with pus in the free peritoneal cavity has so-called drainage material, cigarette drains, inserted, and frequently the patient is not even elevated.

Many of these cases are otherwise vigorously treated by large amounts of fluids put into the circulation in different ways, by lavage, by stimulation and at times by enterostomy.

The resulting mortality is very high, in some sections, going up to 30 per cent or more.

We believe that we have proven that adhesions *can be delayed*, and that the *proper* drainage materials will *drain*, just as long as necessary, certainly for three days and nights.

But real drains must be used, the proper elevated and side position arranged, and fluids administered in as large amounts as the patient will stand.

Tubes must be large, soft, thick-walled and non-compressible. They extend down into the pelvis and in other directions if indicated. They are brought out at the outer (right) end of a transverse incision, the bed elevated sufficiently high, and patient placed far enough on the right side, so as to make the outer ends of the tubes their lowest point. Fluids will gravitate readily down to the tubes and run out into the dressings. Wicks of gauze placed lightly in the tubes will facilitate the drainage.

As much salt solution as the rectum will absorb is administered by the "Murphy drip" with a visible dropper. At least 60 drops a minute will usually be absorbed to start with.

In addition saline may be given sub-cutaneously and intravenously as indicated.

With such a procedure carried out very strictly in every detail, there will be a *continuous discharge*, requiring frequent change of the outside dressings and, instead of diminishing, the discharge will *increase* gradually in amount, and become steadily thinner.

If the proper position of the patient is maintained, on dressing the wound morning and night, the wicks, which should then be changed, are wet with discharge, yet, on passing a catheter attached to a syringe down into each tube and aspirating, little or no fluid is found, simply because gravity has carried it out into the dressings on account of the perfect position of the patient.

Nothing should be given by mouth except water until the stomach seems safe, the patient being nourished by intravenous glucose, though usually simple fluids may be administered on the second or third day.

It is rarely necessary to resort to lavage.

The abdomen remains soft, and the bowels move easily from low enemata, though frequently voluntarily.

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Rocky Mount, N. C., December 8, 1932.

These patients require the most perfect watching and care, especially in keeping up the rectal fluid. The tubes may usually be removed about the fifth day, being replaced by simple rubber dam drains (without gauze) and later the sinuses are readily sterilized by Dakin's solution and Dakin's tubes.

We formerly thought badly of the method advocated by Willis, of Richmond, in which many of the severe cases had the operation delayed, but the Fowler-Murphy method was used vigorously, the operation being performed after a few days, following Ochsner.

In the light of our later experience, we feel more kindly towards Willis' method, recognizing that the Fowler position brought the pus down to the pelvis, where it was more accessible and safer. And the "Murphy drip" forced fluid into the circulation and delayed the formation of shutting off adhesions.

Our method makes use of gravity by our right side elevated position, delays the formation of adhesions by getting into the circulation a large amount of fluid, but in addition we operate without delay and use *ample drainage materials.*

If sufficient fluid is absorbed into the circulation, we believe that the peritoneal surfaces become excreting rather than absorbing surfaces; otherwise, the drainage into the dressings would not increase in quantity and would not become thinner.

The best test of the procedure, however, is the fact that practically all of these patients recover, and, not only that, but there are rarely any complications.

In the earlier cases, we did occasionally have difficulty in moving the bowels, and in two instances had to do an enterostomy.

We believe now that we did not then realize fully the vital importance of "every minute" watching of the case, and more than likely at times the "drip" was not constant.

Delaying of adhesions is important in many other than appendix cases, such as gun shot wounds of abdomen, drainage following ruptured duodenal ulcer, and other infected abdominal conditions.

*Sarah Leigh Hospital.*

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The modern world thinks too much of its rights, too little of its responsibilities.—*John D. Rockefeller, Jr.*

## ON THE ORIGIN AND THE SIGNIFICANCE OF CERTAIN FORMS OF BEHAVIOR.*

JAS. K. HALL, M. D., Richmond, Va.

The catechism declares that man's chief end is to glorify God and to enjoy him forever. But man's chief interest is his fellowman, and the particular aspect of our fellow creatures that most concerns us is their behavior. Our concern about our fellow mortal constitutes the reason for the existence of the daily papers, filled largely with gossip; for our interest in history, biography, philosophy; it accounts for the theatre, the movie, and the radio. All the countless other facilities for transferring human thought would be little used but for man's over-weening curiosity about what his fellowman is thinking, saying, and doing.

This enormous concern about the behavior of a mortal dates from the very birth of the individual; even while the little one is only a senseless mass of tissue the friends of the parents must learn to tolerate the wonderful stories about the infant's remarkably precocious conduct; wisdom is in its face from birth; plan and purpose are in each of its reflex movements. And someone continues to cherish commendable concern about almost every individual's behavior from birth till death terminates the activity. You will probably not doubt my emphatic statement that man's chief concern is man. Interest in human behavior and the hope that something can be done about it causes schools to be maintained at great cost; churches to be established, legislative bodies to be convened, and courts to be created. We may even go so far as to believe that we can create behavior of a certain type and inhibit behavior of another kind.

Although some of us may belong to that school of conduct in which a considerable degree of elasticity in behavior is permitted, yet we all carry in our minds more or less definite standards of conduct, and upon deviations from this standard in others we look with disapproving eyes. By some mental process which we cannot understand we have formulated what we designate normal conduct. Deviations from this normal are dealt with by organized society. In each town and in each county is a prison, and at the state's capitol is the great prison; and here and there in the state are institutions, big and little, for protecting and

*Read by invitation to the Professional Club, Lincolnton, N. C., July 18, 1932.

restraining those whom we think to be without capacity to guide themselves. And to make it still more easy and certain for us to guide the steps of others that would wander out of the chalked-out pathways, some impressive forms of punishments have been ordained about which I may speak later. Civilization would be willing to make many sacrifices, I imagine, before she would be willing to give up her punitive ritual. Someone should formulate a thesis on the philosophy of punishment.

Although human behavior is 'round about us, and in us, and as familiar to us in our daily lives as sunshine, air, and water, yet we know essentially nothing about it. It is our assumed and superficial knowledge of it that we are interested in, and not the phenomenon itself. We are most profoundly ignorant, indeed, of the familiar things. We know little about water, about air; almost nothing about the marvelous properties of light and sunshine; little about life, and nothing at all about death. The physician today knows almost as little about measles, chicken pox, and mumps as Hippocrates knew. And I hope no one knows so little about anything as we doctors know about the so-called common cold.

Is it little wonder that we are ignorant of human behavior? We have until lately made no detached and dispassionate study of it. Nothing was known of the structure and the functions of the human body until three or four hundred years ago. Think of the mighty intellects that had no idea what the heart and the blood vessels were for until William Harvey found out soon after 1600 what purposes they serve! Our ancestors used to admire the human body and rhapsodize about it, and wonder about its inner doings, but they knew nothing about what was happening within the skin. Shakespeare, about 1600 or a little later, made Brutus say to his wife, Portia, that she was as dear to him as the ruddy drops that visited his sad heart; but Brutus knew nothing about the blood visiting his heart, or any other organ of his body. He had no idea what his heart was for.

Dismembering and dissecting our fellowman is grim and distasteful business, even in the dissecting room, and it was a sin and a violation of man's and God's law until only a few centuries ago. There was no objection at all to men's tearing each other to pieces in battles, or in the infliction of punishment for violation of laws, but quiet dissection of the human body that had died of disease was dreadfully sacrilegious. Finally it became legitimate to try to find out how we are made on the inside, and then medicine began to make progress. But it hasn't made much progress yet—not when we doctors are talking amongst ourselves; medicine has just about conquered all diseases only when we are talking to non-medical people. The most doleful and hopeless mortal is the sick physician who has to submit himself to his fellow of like ignorance. How do ministers make it when in need of spiritual consolation; and lawyers when in need of counsel?

Would you object to having yourself laid open and turned wrong side out from your chin to the lower reaches of your abdomen? Certainly you would, even if you knew you would survive the procedure. But you would object much more to having all of your emotional and mental life laid bare for inspection. We not only dare not permit others to know our mental life; we do not even allow ourselves to face it. And for that reason man has lived in ignorance of himself. Only recently have plans been set on foot to make possible thorough exploration of the human mind. And these plans have met with even more violent resistance than was arrayed against dissection of the human body in the middle ages. But mental dissection is as necessary as dissection of the human body. Psychoanalysis, as carried out by Freud and by others, constitutes a dissection of the structure of a mortal's mental and emotional life. The surgeon can actually make his patient proud of the length and the coils and twists of the vermiform appendix that he so dextrously removed; and make the woman proud, too, of the number and the size of the gall-stones he scooped out of her gall-bladder; but I have seen few individuals who cheerfully and pridefully yielded up their buried mental and emotional treasures. Discover for many a woman her real opinion of her pastor or of her husband and learn how grateful she is. Disclose to many a partisan voter his unvarnished opinion of his favorite candidate, and thereby lose your medical client. Stand your naked mental and emotional self before your own eyes and see how quickly you flee away. A posse would be organized within an hour to scour the woods and to drag the mill pond for your lifeless body. We are not looking for the truth. On

the contrary, we are using up our energy in protecting our prejudices, preconceived opinions, and our ignorances. There is no such thing as intellectual honesty. It is not possible for a mortal to be honest. But we entertain the comforting delusion that we are in search of the Truth.

Doubt has been expressed about man's ability accurately to define anything. Words constitute only a few of the symbols of which we make daily use, and we use words to stand for things, and we know that a symbol represents only partially the object for which it stands. Someone has said that only a few worthwhile things have been said, and that mankind ever since has been wondering what those statements mean.

But behavior, whatever it may be, is not an imposition from the outside. The tendency to behave inheres in the living thing, whatever it may be. I am not at all certain that behavior is limited to living matter. Whatever the object does, or does not, constitutes conduct. Behavior is the mental or the emotional state made manifest—it is the mentality mechanized. Behavior has to do with movement. In reference to living things behavior relates to the effort of the organism to adjust itself to its environment.

That quality in living matter, whether high or low, that makes behavior of some kind possible is irritability. In everyday language we are apt to think of irritability as a disagreeable quality, but we give the term an unhappy meaning. In scientific language irritability means only the capacity to respond to a stimulus—and the world in which we live is filled with stimuli. Responsiveness constitutes behavior. The gardener, the florist, the farmer, know of the potential responsiveness of seeds; placed in the proper soil at the right season they become irritated by warmth, moisture, and darkness, and spring into plants. The lowest forms of life—the infant mosquito in the stagnant pool; the tiny fish in the stream; the day-old chick; the new-born child—all, by their inherent irritability, are made responsive to the myriad stimuli around them, and behavior —conduct—is the result. No one would feel like asserting that such behavior is life, but it makes life, growth, reproduction, and all other activity, possible. This effect of the environment upon the individual living thing, and of the living organism upon its surroundings, mutualizes life. In contemplating this effect we reach the inescapable and dignified conclusion that no organism, large or small, is so inconsequential that it does not make some contribution to life. We talk much about the individual and about the environment as if they are different things; are they differentiable? Some portion of the environment tomorrow becomes a part of the individual; by tomorrow some portion of the individual likewise becomes a part of the environment.

By the study of anatomy we learn of the structure of the body; physiology teaches us the functions of the different organs; but behavior involves the entire individual, and when we are thinking of the whole-man or whole-woman activity, then we are thinking in terms of psychology. I know of no objection to thinking of entire-individual activity as mental—as mind. We are prone to look upon conduct—behavior, if you please—as an expression of consciousness, but such an assumption is hardly justified. We behave, to be sure, when we are asleep; when we are anaesthetized—i. e., robbed of consciousness; and when unconscious as the result of injury or of disease. Even the lowliest form of life—microscopic life—germs, and other small cells—behave in definite fashion, yet no one would ascribe consciousness to such low forms of life. But wherever there is life there must be that quality that we may speak of as mind. I am preparing myself for the statement that little of our behavior is of either conscious or of intellectual origin. But that does not mean that we are senseless creatures. It means, on the contrary, that we are saturated with sense, with behavior-resources, that have nothing to do with what we think of ordinarily either as consciousness or as intellect.

Were I even competent to enter upon a metaphysical discussion of the nature and the origin of the mind, there would be no place for it this evening. We are concerned in our daily lives with the pragmatic aspects of behavior in others and in ourselves. The medical man's training inclines him to the belief that man has kinship both in structure and in origin probably with all other forms of life; and the story of man as a special creation may appeal to his ecclesiastical orthodoxy but not to his biological and physiological judgment. Even in the human body there are evidences that man in some form has long been upon

the earth—how many millions of years would involve only speculation—and that man's present anatomical structure is the result of changes that have been slowly evolving him out of an exceedingly low order for aeons and aeons. In other words, man's body is probably exceedingly old. Let us assume, and I am becoming speculative, indeed, that the human body began its existence in the sea or in the marshes as a structure of one cell, and that unit so small that the unaided eye could not see it. If you are willing or able to go with me in that assumption, then you will experience no difficulty in believing that our ancestors have been on the earth for a long time. Can you believe, as I do, that man's original ancestor, the one-cell structure, was characterized by some sort of behavior? Surely, otherwise, that many-times great-grandfather of ours would have perished. We are compassed 'round about by ignorance, and weighed down by humility, but we are obliged to think, even though we know that most of our thinking is wrong. But I am asking you to join me in the tentative belief, at least, that our behavior had its beginning 'way back there millions of years ago when our bodies had their beginnings, and that our behavior is as old as our bodies.

Perhaps because our primitive ancestors crawled out of the slush and came into a more complex and difficult environment our ancestral bodily structure became more complex and more efficient, in order to deal with that more complicated environment. In the same fashion, and along at the same time, our ancestral behavior became less simple and became more complicated. Let us suppose that our earliest ancestors were without hands, feet, eyes, ears, noses, and taste. When in that state their behavior must have been primitive indeed. Then there were no schools, prisons, churches, political conventions, Sunday-school picnics, and no medical societies and no professional clubs. But a nervous system gradually developed in our remote relatives, portions of it were pushed as far out as possible into eyes, ears, noses, and tongues, and special senses were evolved, and our ancestors acquired enormous information about their respective neighborhoods. In other words, they became much more easily irritated in countless ways, and in consequence their behavior became much more complex. Eventually, but not for a long time, what we think of as a mind developed, and finally an intellect and emotions and feelings. I have thought of these qualities, not as products of the body, but as parts of it, just as I think of color as an inherent property of the eye.

That first type of behavior that seems to have in it conscious purpose we must think of, I suppose, as instinct. Now, mind you, I did not say such behavior is consciously purposeful; I only said that it might seem to be directed. We see such activities daily in the so-called lower animals. All of their activities have to do in a general way with preserving their lives and perpetuating their kind. They feed and they breed; and so does man. We see instinct at work in fine fashion immediately in the newly-hatched chick. Taken after its first day of life from the darkness of the incubator and placed in a brooder-house, it responds perfectly to the presence of three objects it has never seen before—the brooder, with its warmth; food, and water. If the chick did not make use of these things it would promptly perish. Yet in the use of none of them has it had instruction. The behavior of all living things, vegetable as well as animal, is motivated by instinct. Of our own behavior that is likewise true. Our conduct is modified by higher qualities, but it is instinctive in origin. Have we any adequate conception of the meaning and the influence of instinct? Hardly. I think of all life, indeed, as a more or less organized system of instinctive cravings, hungers, desires. And I think, too, of all activities merely as efforts to satisfy such cravings. Instincts are tendencies to behave in a certain fashion. Long ago, James, the psychologist, defined instinct as the faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without having been trained in the performance of the acts leading to those ends. The individual behaves in instinctive fashion because it cannot do otherwise; it cannot help it. We are mistaken in seeing either virtue or mischief in pure instinctive behavior. The behavior results from the structure of the organism and the environment. Instinct simply is. It has no respect for law, ethics, place, or time. Instinct is both as remorseless and as patient as time. It cannot be destroyed; it knows nothing about negation; and frequently it cannot be controlled. It is as unceasing and as persistent and as un-

feeling and as impersonal as gravity. It causes the new-born child to cry, to suck; later to crawl, and to walk: the mother's love and her labors and sacrifices, are expressions of it; but—are they virtues? Most mothers in the lower orders exhibit the same attitude toward their young. Love, fear, hate, revenge, jealousy, courage, pugnacity, emulation, acquisitiveness, the martial spirit, industry—are all of instinctive origin. This strange force dominates the world of life as thoroughly as gravity controls the world of matter. Has gravity pity, consideration, respect, compassion? Has instinct any such qualities? It is—and no more. I speak of it at length, not because I understand it, but because I recognize it and respect it. Perhaps it is God at work in His world. I speak of it because it all but dominates us—in the home, in the school, in the church, in society, in all our lives. All man's tragedies result either from his yielding wholly to its influence, or because of his unsuccessful conflicts with it. Instinct mates the sexes, builds homes, begets children, sends men to wars, destroys, brings them back to peace. Man's success is evidence of his ability to make terms with his instinctive urges; his failures are the result of his inability to get along with that inherent drive that permeates us all. It is the mightiest force in the world; yet we often deny its very existence in us; we erect countless taboos around the sexual instinct; we think, too, often of instinctive conduct as base or degraded. We should respect it, and try to understand the great purposes in life it subserves. Instinct is our most natural quality. It is our naked, natural selves.

But in civilized man instinct is not the sole source of behavior. Thousands of years ago man's increasingly complex nervous system had already developed to the extent that he had acquired more information about his environment than any other animal. Sensations had been pouring into his brain from his eyes, ears, nose, tongue, and from all his surface and all of his interior, and out of these sensations experiences had been evolved, and in such fashion man slowly acquired those qualities spoken of as reason, judgment, will, volition,—in other words, man became intellectual. Our ancestors acquired knowledge and became conscious of its possession. They were no longer wholly dependent upon instinct to guide and to protect them in all their activities. Man became able to contemplate himself. He became subjective as well as objective in his thinking. Is any other animal save man able to contemplate itself? But in developing an intellect and in acquiring character—moral qualities—man lost none of his instincts. He found himself saddled with two sources of behavior, and ever since he has been having trouble on that account. His instincts had formerly been in complete charge of him; now that he had developed a mentality he must pay some heed to its suggestions. What was he to do?

Whenever two authorities coexist conflict is certain to arise. An arbitrator in such a circumstance always becomes necessary. We establish means of arbitration in our daily lives. Each state and the nation has its supreme court. In the home the parents should be competent to serve such purpose. Life is filled with arbitrators—with too many of them, perhaps. Each individual had to be provided with a final authority to deal with the conflicts that might arise within him between instinctual urges on the one hand and the intellectual tendencies on the other. This arbitrator, or censor of personal conduct, we call in our every-day speech conscience. Socrates called his censor the voice. The decisions of this umpire, you know, are often derided and disregarded, even as the decisions of the umpire on the athletic field. But some sort of censor is necessary. The only sort of punishment that is effective is that inflicted from within, and not from without, the individual by the personal censor. To the good citizen criminal laws are insulting; to the bad citizen, futile. It is little wonder that the censor encounters difficulty in its administrations. The instincts are ages-old, and they naturally resent interference with their activities. The intellect, though of recent development, feels itself superior to mere animal instincts, and the intellect naturally expects the decisions to be in its favor. The mind claims, of course, to have on its side all the higher qualities—reason, justice, decency, and morality. I object to a paternalistic government; to an authoritative religion; to the functions of society exercised by so-called foundations, because all such exercises imply the substitution of another's censor for the individual's censor. Society has the right to have an inefficient government if

it so desires, and the individual the right to risk hell, if he is willing.

The function of this censor is to make the individual fit for that state of society that we call civilization. Consequently we might give at least brief consideration to the origin and the nature of this important mental quality. Whence cometh it? What is it? The infant in the mother's womb is in a state of relative omnipotence. There all its wants are supplied. It is required to give no thought to sustenance or raiment. The unborn infant is nourished and clothed by its mother. But birth changes this perfect state. Birth brings physical detachment from its mother. The child immediately after birth must breathe by its own effort and find the nipple and suck, or else it will straightway perish. Consciously or unconsciously, the child realizes its dependence on its mother, and later also upon its father. To the child, for some period of time, the parents are omnipotent; they are the reservoirs from which all its wants are supplied; they are omniscient, as well as omnipotent. The child not only looks to them but up to them. Later, other authorities enter into the life of the child —other children, perhaps; elder persons; the teacher; the preacher; the policeman; other officers of the law; and still later the law itself, in abstract fashion, both civil and moral; and, finally, the individual's conception of God. From such varied and diverse sources the censor—conscience—is evolved, and this surrogate of the parents takes charge of the individual, for good or for evil, and deals with the person throughout life. All of us realize even in our mature adulthood that in contemplating some particular course of conduct we presubmit it, as it were, for approval or disapproval, to some authority. The valid criticism that can be sustained against our civilization today is that the individual is trying to guide himself by a censor of governmental origin rather than by a personal censor. That constitutes the difference betwixt paternalism and individualism. Often we speak somewhat loosely of this censor as public opinion. The quality of the censor, one can easily understand, is of enormous consequence. Its very function is to fit the individual for civilization. Its purpose is personal socialization. Upon its quality depends the success or the failure of the individual as a member of the social structure. Realization of that fact is tied up in the profound statement that a child trained up in the way that he should go will not depart from it, even when old age has come. The statement emphasizes the importance of surrounding the child with all good influences. After all, behavior must be largely a matter of imitation, of emulation, of patterning after examples.

But the censor is called upon to attend to more than the instincts. One never knows how much one's possessions are until one moves—changes residence. Those of you who have done this have realized the extent of your material holdings—many of them of little value, to be sure, but not of such inconsequence as to be thrown away. Every home is provided with a basement and an attic and with little-used closets in which the things are seldom used, or not used at all, can be kept; and in which the things can be kept that we ourselves do not wish the neighbors to see at all. But our mental and emotional accumulations have been taking place much longer than our material accumulations, and these immaterial accumulations are much more diverse, much more difficult to store, and much more difficult to live with. After we have lived for some time our store of knowledge becomes so great that we cannot keep it all in the same room. The basement into which we relegate out of sight and out of mind, if we can, all the not-needed and all the annoying thoughts, feelings, and memories, is called the subconscious. Into it we repress the things in our emotional and mental life that we are ashamed of; that we wish had never occurred; that we do not like for the neighbors to know about; into such a region we try to send clear out of our own sight all painful and embarrassing memories; and into the same region of the sub-conscious we send also all the knowledge that we do not need in our daily lives. The process of ordering things into the sub-conscious domain and keeping them there is known as repression. It is the business of the censor to attend to these repressions. The neuroses and the psychoneuroses—fear states, anxieties, hysterias—arise out of the conflict betwixt the individual's instincts on the one hand and his intellectual and moral trends on the other. This conflict is within the individual. The psychoses — insanities — manifest the conflict betwixt the individual and the outside world—a social struggle. If the censor happens to be-

come careless and to let out the wrong thought at the wrong time and in the wrong place the mischief is to pay. Under such circumstance the neighbor might find out what you really think of him; and we doctors might discover by the same process what some folks actually think of us. Slips of the tongue and slips of the pen are thought to let out the actual truth, while the censor is nodding and not keeping a firm foot upon the lid. The rebellion of the masses against the political censor constitutes revolution; when the situation becomes intolerable nothing else but revolt is left for the masses.

Out of this enormous region of the subconscious come all dreams. They come out, too, while the censor is inattentive to his duties. We often laugh amongst ourselves about our foolish and fantastic dreams. There are no such things. Every dream is the disguised representation of a wish or a fear. The dream fulfills for us in our sleep what we unconsciously long for when we are awake; or the dream brings to realization our conscious fears. Why are so many dreams apparently absurd and seemingly meaningless? Because of the clothes they wear. Dreams disguise themselves in order to pass the censor unidentified, as adults conceal their identities at a masked ball. The dream-content affords a better index to the mental life of an individual than that furnished by the content of conscious thought. The ancients understood this fact, and all ancient literature, sacred and profane, is filled with accounts of dreams.

The censor keeps the lid on—if it can. But many things lift the lid. What? Sometimes an emotional storm, such as fear, anger, anxiety; alcohol, and other drugs; the lingual indiscretions of the drunkard are well known. The patient emerging from general anaesthesia wishes to know if she said anything terrible while she was asleep. The unconsciousness, or the delirium caused by injury or disease, often permits things to slip by the censor and to find embarrassing expression in every-day life. With the vaudeville wit and with such characters as Will Rogers we join in the laughter evoked by the fun poked at the content of our own subconscious accumulations. We are safe, I suppose, so long as we can laugh at ourselves and allow ourselves to be laughed at.

May I near the conclusion ask you to think of this immaterial state called mind somewhat as you would think of a particular material structure? Let yourself imagine a three-story, three-room house. The largest room is the basement; the next in size is the ground-floor; the third-story room is the smallest. In the well-lighted third-floor room is our every-day knowledge that is immediately available and that we make constant use of. This room is the busy every-day room of the mind. The mental tools in constant use are kept there. Beneath the topmost room is the larger ground-floor room. In it is stored the acquired knowledge that one less frequently needs—the accumulations of personal acquisitions resulting from education, and experiences of all sorts. Here we find the knowledge that can be drawn on through memory—the multiplication table; the Twenty-Third Psalm; Poe's Annabel Lee; portions of Patrick Henry's great speech; Lincoln's Gettysburg address; our professional knowledge is stored here; and into the same room of the personal subconscious we have sent also throughout the years, in order to get them out of annoying reach, all the mean and ugly and low-down reprehensible and ungodly and vile things that we have thought, said, and done. This room houses the personal historical past. In the basement beneath this room are housed the enormous herd,—may I so speak of them?—of instincts; all those tendencies and trends and urges and impulses that we acquired by inheritance from our ancestors from the very beginning of animal life. We know something of the nature of some of the personal instincts, but almost nothing of the racial instincts—the inheritances from our ancestors of millions of years ago. The basement room houses the racial historical past.

We ought to be willing, at least, to understand that behavior is no simple affair. Although it is provoked from without, it springs from within. But it may have its origin in the third-story room of the acutely conscious every-day life; it may spring from the room beneath—from the personal subconscious; or it may represent an emergence from the basement room beneath all, and be a manifestation pure and simple of an ancestral inheritance through instinct—recent or remote.

What determines the quality of human behavior? We have already discussed its origin. The three factors that we have been talking about each and all have their voice in influenc-

ing conduct. No change can be brought about in the instinctual inheritance. Nor can we do anything to the weather. But we can anticipate its changes and adjust ourselves in some fashion to its variations. We must not despise our instinctual inheritance; it kept our ancestors alive for millions of years. and it motivates without our being bothered about it most of our every-day conduct. Our daily behavior is enormously affected by the content of our repressions. Thoughts and emotions and memories do not like to be crowded in a room, and they are constantly trying to break out. But they can emerge only through the medium of behavior; and if we behave in non-conforming fashion society will do something to us. The third-floor room, filled with immediately available knowledge. has somewhat to do with our daily conduct. but not so much as we think. All of our activities are instinctive or emotional in origin, certainly subconscious, and intellect. and even consciousness. has little to do with what we are and what we do. Now, over these three domains the personal censor presides, and the censor's job is not an easy or successful job. The censor occupies the position not unlike that of the master of the house in which there is mother-in-law, daughter, and son-in-law. Discord and not concord is the essence of their lives. But the function and the hope of the censor is to make the human animal a civilized, social creature. The censor must either keep in repression many of the instincts, or else release their energies in such a way as to make them not objectionable, if not helpful. The attractive and sprightly young lady may be the social leader for a long time; dancing, playing cards; unwilling to give up her good time. She discovers finally with a shock at thirty-five that her friends are all married. There is no hope of marriage for her. She becomes commendably interested in church work; the head of all the missionary activities; president of the book club, and active in politics. She has sent her instinctive energies along new pathways. We say that she has sublimated; and that was a splendid thing for her and for the community.

What is good behavior and what is bad behavior? Good behavior is that approved by the community. It is not good because of some intrinsic quality in it. Behavior rated good today may be outlawed by next year. Bad behavior is that disapproved by the community. Its inherent quality has little to do with its standing. Though rated bad today it may be in excellent standing five or fifty years hence. Good behavior represent the individual's desire and ability to conform to a good standard. Many influences affect the capacity to adapt one's self—to conform. The censor may be inefficient, and make possible the emergence into conduct of forces from beneath—instincts and repressions—in the form of so-called bad behavior. Such a theory would offer tentative explanation of much delinquency. The mentally subnormal individual is generally not badly inclined; his judgment is infirm; his censorship poor; he is too susceptible to outside suggestions, and unfortunately there seem to be for him more evil than good suggestions. The censor, on the other hand, may be in good order, but the instinctual and subconscious forces may be irrepressible, and come forth as conduct of non-social form—inadequacy, crime, insanity. The circumstances, even the environment, may be factors in affecting behavior. Bad example or evil companionship may weaken the influence of the censor, or add force to the urges of the instincts or weaken the repression. A wholesome environment may, on the other hand, make possible the continued stabilization of an unsteady character.

Conflict is the very essence of life. Disequilibration is but another name for personal existence. All activity results from differences of tension. There are only two objects in existence—the individual and his universe. The individual is individualistic, unlike every other individual, and his universe is unlike the universe of every other mortal. Consequently there are many types of behavior. That is troublesome but well; life would be intolerable if all of us behaved alike.

Civilization is an unnatural state. Man is an animal; he is the only animal that has ever attempted to civilize himself. Human history records the long list of his failures in that direction. Warfare is only another name for mass-conflicts of human behavior. The instincts, the primitive motives and guides of human behavior, have no interest in laws and religion and schools and morals. They are concerned only about the satisfaction of their natural hungers. All that civilization does constitutes an attack upon instinctive trends. Almost every legislative enactment penalizes

natural, instinctive, human behavior. That is why the legislator is looked upon with suspicion; that is why the people breathe more easily after the legislative body has adjourned; that is why we have so little respect for statutory law: we know that it too often begets sham and hypocrisy and pretense and unnaturalness. The two most potentially dangerous assemblages in our civilization are our law-making bodies and our courts; the one to formulate laws; the other to interpret and to apply them. Whenever the criminal is on trial, the civilization against which he rebelled is likewise at the bar. The fault is mutual. Nobody likes a reformer; everybody feels in a vague sort of way that the reformer is trying to formulate in others by force a type of behavior that he is unable or unwilling to set up in himself.

Civilization is a failure—often. Every prison confirms that statement; every reformatory proclaims its truth; every inmate of an insane asylum represents the failure of the individual to measure up to the social demands of what we euphemistically call civilization. Every drunkard and every drug addict cries out through his addiction against man's fabrication that was too much for his strength—civilization. Man's unhappy and unsuccessful attempts to civilize himself and his kind are responsible for all the tragedies of history. One of two things is true—we are either unfit for such civilization as we have fabricated, or it is unfit for us. Occasionally in the court room I am asked if the prisoner knows the difference betwixt right and wrong. What in God's name is right and what is wrong? What does a puny mortal such as I know about either? Isn't right today wrong tomorrow, and vice versa?

If the present unhappy period in which we are existing will only give us a keener appreciation of the eternal verities I shall believe that we have been compensated for our suffering. If we can be got out of our present state of sham and pretense and hypocrisy and airs and bombast and ungodliness and be made to realize that naturalness is not sinfulness and that sham is not a virtue; if we can be made to know that we cannot deceive God for a moment and ourselves even for only a brief period,—then I shall be thankful that I have lived through this cosmic cataclysm. Have we not been told from on high that unless we become converted and become as little children that we cannot enter into the kingdom of heaven? Little children are natural and honest and decent and sincere. I doubt if the statement refers to a geographical location. I think of it as meaning a state of mind and of emotions—a spiritual state. All great souls have had the thoughts of God. Was not Omar Khayyam inspired by God when he sang:

I sent my Soul through the Invisible,
Some letter of that After-life to spell:
And by and by my Soul returned to me,
And answer'd "I myself am Heav'n and Hell."

## ACUTE APPENDICITIS AS OBSERVED BY A COUNTRY DOCTOR.*

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I am attempting to write something on the subject of acute appendicitis as observed by the country practitioner. As you perhaps surmise, I have nothing that is scientific, nothing that is original, but I hope something helpful. Each member of the profession has a place in the scheme of things professional and, with reference to appendicitis, I have found my place to be that of beating the brush, scaring out the game and getting it going in the right direction. This, it seems, would be an easy task, yet it requires some thought and some knowledge, because if we should be hunting wild turkeys, we would not wish to drive in Jack rabbits. What I have to say has mainly to do with the importance of an early diagnosis, the difficulties which we have, in many cases, of arriving at a diagnosis, and the unavoidable delay in getting these cases in the hands of a surgeon at the proper time. Having had more years of experience than I wish to admit, it has been my fortune, or misfortune, to see quite a large number of cases. That which concerns and distresses me most is that far too many cases are allowed to rupture and to reach the surgeon with all sorts of complications. It is a pity that every case of appendicitis could not be seen and operated upon by a competent surgeon before such serious developments occur, thus endangering the life of the patient, prolonging the stay in the hospital, and certainly not adding anything to the reputation of the surgeon or the attending physician. I do not believe, however, that usually it is the fault of the general practitioner.

*Read at a meeting of the Piedmont Medical Society of Virginia, at the University of Virginia, November, 1932.

Some years ago a prominent Virginia surgeon read a paper at a State Medical Society meeting on the "Increasing Death Rates Following Operations for Appendicitis." In his discourse he laid the chief cause of this at the door of the general practitioner and especially the country doctor. I felt that this was unjust. There was a time, many years ago, when we undertook to treat the first attack of appendicitis by putting the patient to bed, applying laxatives and enemas, with the hope of tiding the patient over the attack and with the recommendation of an operation later on. No doctor of my acquaintance undertakes to treat appendicitis any more, but just as soon as a diagnosis can be made, the attending physician advises and urges an operation at once. The surgeon, therefore, in late years has the patient at an earlier stage than was once the case and I do not understand why this should contribute to an increasing mortality rate.

I have said that no physician now-a-days gives purgatives. There is one notable exception to this rule. One doctor of my acquaintance, who thought himself of some little importance, did take magnesium sulphate and not being satisfied with the first dose, repeated the dose and applied hot stupes. Later in the day he went to the hospital with a ruptured and gangrenous appendix. This goes to prove that any doctor who undertakes to treat himself has a fool for a patient. I shall not mention the gentleman's name.

Although many of our cases of appendicitis go on to rupture and appendiceal abscess and other complications, I have never heard a word of criticism from any surgeon to whom I have referred patients. I would like, however, to call attention to the disadvantages under which we labor and in many cases the obstacles which stand in the way of getting these patients to the hospital. In the first place, we do not have the advantages of the laboratory to make a blood count, nor have all of us been sufficiently trained in the use of the microscope in making satisfactory urinalysis. Then, too, it is not possible for rural physicians to have such close observation of the patient, because of the distance to be traveled, condition of the roads, and press of professional calls. Often it is not possible to see the patient more than once a day. If called within the first hour or two of the onset, it is frequently impossible to make a diagnosis. Only recently, and the patient is just now leaving the hospital, I was called within two hours of the attack. The patient had severe and colicky pains all over the abdomen, nausea and vomiting, but no definite tenderness and no spasm of muscles over abdomen and normal temperature. Suspecting the appendix, I directed use of the ice-bag and enema and gave a hypodermic to relieve the pain. This was at 8 A. M. I instructed the practical nurse to report in the afternoon. She did not do as directed, but when the pain recurred she gave a hypodermic. The next morning when I called she had a definite case of acute appendicitis and, when operated upon about 2 P. M. of that day, the appendix had leaked, requiring, of course, the drainage tube. A far larger number of these cases rupture before calling a physician.

It is surprising how many cases come to us with ruptured appendices and appendiceal abscesses, which have not even consulted a physician. I recall that of a young girl of 20, who came into my office and said that she came shopping and while in town thought she would see me about her side. Upon examination I found an appendiceal abscess the size of an orange. I recall another case of a man who drove up to my office with his family and said he was going on a visit, but stopped in to get something for his daughter who was suffering with menstrual cramps. I found that she had a temperature of 102 and a definite mass in the abdomen which proved to be an appendiceal abscess.

Typical cases of appendicitis, as everyone knows, are not difficult of diagnosis. A history of one or more similar, though slighter attacks, history of constipation, of being seized with abdominal pains, in a few hours locating in lower right abdomen, nausea and vomiting, with temperature of 100-102, tenderness over the lower right quadrant, with muscular spasms, increased white blood count, negative urine and a normal pelvis, the chances are you have an acute appendix. Unfortunately, all cases are not typical and although all of these symptoms are present, it is well to remember that one might be mistaken. It may be that there is diarrhea instead of constipation. The temperature may be normal. It is not always possible to detect tenderness or muscular spasm and there may not be vomiting, although in my experience nausea is rarely absent.

When once the diagnosis of appendicitis is made, the country doctors are frequently confronted with other problems of getting the patient promptly to a hospital. There is the question of remote cases, of impassable roads, the lack of finances and means of transportation. In 1930 I was called fourteen miles from home and found a boy of 18 with a very acute appendicitis. The last five miles were over roads almost impassable and rain was descending in torrents. There was no one there except the mother and some small children. There was no telephone connection and the father was reported to be in a nearby town. (I learned later that he was almost in sight of the house running off a doublin of moonshine.) There was nothing I could do but postpone removal to a hospital until the following morning. When operated upon he had a ruptured appendix.

It is well to remember that not all cases which have acute abdominal pains with nausea and vomiting and a moderate degree of temperature are cases of appendicitis. The following are unusual or atypical cases:

Mrs. T———., 28 years old, four months pregnant, was taken suddenly ill and with severe abdominal pains, nausea, vomiting and temperature of 100, with a decided mass in the lower right abdomen. I took her to the University of Virginia Hospital. Dr. Goodwin, who examined her, found the mass to be movable. He was uncertain and properly deferred operation. She remained in the hospital two weeks, all symptoms subsided and the mass disappeared. Two weeks later, she had an attack like the first one. I again took her to the University Hospital. Operation was decided upon and what was found was a fibroid tumor attached to the side of the uterus caused by tortion. The tumor was removed, pregnancy was uninterrupted and at term gave birth to a healthy boy.

Mr. B———., aged 22, seized suddenly with pains all over the abdomen, but principally in right part of back, extending to the bladder, nausea and vomiting but no temperature, no tenderness and no spasm. Diagnosis was kidney colic. This was at 9 A. M. At 2 P. M. symptoms returned. This time, upon examination, temperature was 101, marked tenderness over McBurney's point, considerable spasm. Diagnosis—acute appendicitis. He was removed to the University of Virginia Hospital and diagnosis was confirmed, but while preparing the operating room, report of urine showed blood. X-ray was taken and a stone found in ureter just over the appendix.

Mrs. L———., widow, aged 48. Acute attack with violent colicky pains all over the abdomen, profuse diarrhea, vomiting every few minutes, temperature normal, no tenderness, no spasm. I left with an appointment to see her the following morning. I received a message that the patient was so much improved that the visit was not necessary. Six days later, after being up and around for several days, she went visiting and while walking up a hill collapsed. I was called and found a ruptured appendix. She was removed to a hospital in Richmond, was operated upon immediately, but had a general peritonitis and a stormy time for many weeks. Dr. Robins, I think, reported this case at a State Medical Society meeting.

Mr. C———., aged 23. No previous attack, sudden onset, pains all over abdomen, frequent green stools, temperature 100, no tenderness, abdomen prefectly relaxed, no spasm. There was at the time an epidemic of diarrhea in my territory. This condition of things kept up for three days, temperature 100 and 101, still no distention of abdomen, no spasm and little pain. I made a rectal examination, which I should have made sooner and found an appendiceal abscess low down in the pelvis. He was operated upon and made an uneventful recovery.

These are only a small number of abnormal cases which have come under my observation. When one considers the number of these cases which come to the surgeon with all sorts of complications, it is surprising and gratifying to see the great percentage of complete recoveries. This I attribute to the skill, the technique and the after-treatment of the modern surgeon.

In what I have said above, I have only hinted at the trials and tribulations, the problems and perplexities, the disappointments and disillusions of the country doctor.

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Success is failure turned inside out,—
The silver tint of the cloud of doubt,
And you can never tell how close you are,
It may be near when it seems afar;
Stick to the fight when you're hardest hit—
It's when things seem worse that you mustn't quit.

*—Edgar A. Guest.*

## RECENT ADVANCES IN THE TREATMENT OF BURNS.*

H. J. WARTHEN, JR., M. D., Richmond, Va.

The treatment of burns has undergone a marked change in the past decade. Ten years ago interest was centered primarily in the local lesion, which was treated intensively while the constitutional symptoms, though recognized, were not effectually combated. Moist dressings or ointments were usually applied to the burned area. The large number of preparations and procedures utilized attest the unsatisfactory results. Compresses of bicarbonate of soda, normal salt solution, one-half per cent acetic acid, boric acid, and one per cent aluminum acetate were recommended. Vaseline, zinc oxide, cold cream, and bismuth paste were applied. Patients with recent burns were placed in continuous tubs of warm water or saline. Debridement of the burned areas was recommended, but the additional shock of an operative procedure on an already handicapped subject made this method hazardous in extensive burns. Bancroft reported a mortality of 57 per cent when debridement was done.

The use of Ambrine, a proprietary preparation containing paraffin and oil of amber, and carron oil, consisting of equal parts of linseed oil and lime water, was followed by a slight reduction in the mortality. Picric acid, suggested by Thiery, could not be used over extensive areas without danger of liver damage. The dry heat method of Sneve gave encouraging results, but was not generally accepted. Exsanguination followed by transfusion was occasionally practiced, but presented technical difficulties in infants due to increased viscosity of the blood. Amputations were recommended in extremities which were badly carbonized. The local therapy overshadowed the general treatment, and Underhill's observation, "What does it profit a man if he dresses the wound beautifully and yet loses his patient?" was quite appropriate.

In 1922 Vaccarezza[1] demonstrated by animal experimentation that the toxic symptoms following burns were due to the circulation in the blood of decomposition products from the damaged area. Dorrance and Bransfield[2] in 1922 advocated one-half per cent acetic acid compresses in conjunction with dry heat, which they found superior to other forms of local treatment. Intravenous injections of 1000 c.c. of 5 per cent dextrose were given frequently to prevent concentration of the blood elements.

Underhill[3] in 1923 stressed the significance of anhydremia in extensive burns. He found that a blood concentration of 140 per cent was incompatible with life. Later studies by the same author revealed that a burn involving one-third of the total body area may mean a fluid loss of 6000 or 7000 c.c. a day. He recommended forcing fluids to the extent of 4 to 8 litres a day in severe burns.

Robertson and Boyd[4] (1923) reviewed the theories of the chemical nature of the toxin. This had been variously thought to be a ptomaine, a nucleoprotein rather similar to snake venom, a pyridine base and muscarine. These experimentors burned the skin of rabbits and noted the primary shock, lasting for six or eight hours, followed by severe toxic symptoms during the first week, characterized by drowsiness or excitability, marked elevation of temperature, convulsive twitching, occasional diarrhoea, and hemoglobinuria. The nonprotein nitrogen was elevated about 50 per cent in the majority of cases, due largely to an increase in the urea nitrogen. These symptoms gradually disappeared after two or three weeks. The majority of the deaths occurred during the first five days. These experiments were repeated in burns of the subcutaneous tissue with identical results. Burns limited to the muscle caused toxic symptoms, but the animals recovered. It was found that excision of the burned areas within eight hours following the burn prevented the appearance of toxic symptoms. Later removal did not prevent toxemia. When burned segments of skin were transplanted on unburned animals, toxic symptoms appeared within one hour after the transplantation. It was further demonstrated that the toxin is carried in or absorbed by the red blood cells.

These experiments indicate that the toxin, which contains primary and secondary proteoses, consists of two parts; one part is thermostabile and diffusible, and exerts its action on the nervous system, while the second portion is thermolabile, colloidal, and necrotoxic. This toxin was found to be soluble in water, saline, and alcohol, and to be nonvolatile. Robertson and Boyd were unable to

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demonstrate any antibody formation against the toxin of burns.

Brancati[5] (1924). in a study of the toxemia following burns, decided that death was due to anaphylactic shock from proteins changed by the heat. This was substantiated by Olbrycht's[6] (1924) pathological studies, which showed that an immediate loss of chromaffin substances and lipoids, with low epinephrin content similar to that seen in anaphylactic shock, was a constant finding in the suprarenal gland following burns.

Ravdin and Ferguson[7] (1925) stressed the importance of early treatment in burns, quoting Blumenau's series of 186 cases under 14 years of age in which 43 per cent of the deaths occurred in the first twenty-four hours. They reviewed the theories of death following burns, namely: (1) malfunction of skin, with loss of respiratory and excretory ability; (2) alterations in the vascular system from thrombosis. vasodilatation, etc.; (3) over-stimulation of the nervous system, shock, etc.; (4) changes in the blood from loss of red blood cells, with formation of toxic substances; (5) the recent toxin theory, due to action of heat on the proteins of the skin. They recommended placing the patient in an electric cabinet kept at 100° F.. and compressing the burned areas with one-half per cent novocaine solution, followed by debridement under a general anesthetic as soon as reaction from shock occurred. The excised areas were sprayed with 2 per cent solution of dichloramin-T. Fluids were forced and dextrose was given intravenously if necessary. Magnesium sulphate was given by mouth to prevent renal impairment, and a high carbohydrate diet was thought to spare the liver. Exsanguination and transfusions were resorted to occasionally, 20 c.c. of blood being given for each pound of body weight in children.

In 1925 appeared Davidson's[8] first article upon the local treatment of burns with tannic acid. Basing his work upon the assumption that the toxemia of burns resulted from the absorption of autolytic products of protein decomposition, he endeavored to prevent these products from reaching the circulation. Previous attempts to accomplish this by arresting the autolytic process by mechanical removal, as baths, debridement, and vasoconstrictors, having proved unsatisfactory, Davidson decided on tannic acid because this forms a stable compound with the protein constituents of all body fluids and cells with which it comes in contact. This stable chemical union prevents further chemical, bacterial, or mechanical action. By using a 2.5 or 5 per cent solution the astringent effect is limited to the most superficial layers of tissue and systemic symptoms are avoided. Davidson states that tannic acid is analgesic, and that toxemia is lessened; the local astringent effect prevents the loss of body fluid, secondary infection is markedly limited, and the protective layer of coagulated protein forms a scaffold for the growth of young epithelial cells, with diminution of the subsequent scar.

Bancroft and Rogers[9] (1928) reported a 20 per cent mortality with tannic acid as compared with 40 per cent following the use of picric acid, and 57 per cent following debridement. Wilson[10] (1928) reported 50 burns treated with 2.5 per cent tannic acid compresses, with 7 deaths. Three of this number died from intercurrent infection unrelated to the original burns, giving a burn mortality of only 8 per cent. However, this series did not contain many third degree burns, as only one case necessitated a skin graft. Davidson,[11] in recent articles (1930), quotes Harris, Herzfield, and Backman as having reduced their mortality from 26.6 to 12.0 per cent, 38.0 to 9.0 per cent, and 27.8 to 14.9 per cent, respectively, by the use of tannic acid. Davidson summarizes his results as follows: Before tannic acid was used 25 per cent of the fatal cases died in the first thirty-six hours, i. e., from shock; no deaths resulted during this period after the tannic acid treatment was begun. Thirty-three per cent of the fatal cases formerly died during the next seven days, i. e., from toxemia; 17 per cent now die during this period. The remaining deaths occur late because of exhaustion or some complication. Davidson feels that "the high late mortality is due to life being prolonged in very extensive burns that formerly died early, either from shock or the toxemia of the burns."

Greenwald and Eliasberg[12] (1926) reported two fatal cases of burns showing a marked hypoglycemia, instead of the hyperglycemia usually noted in burns. Following animal experimentation they concluded that the initial shock characterized by hyperactivity of the suprarenals was associated with a high blood sugar content which contra-indicated adrenalin and dextrose administration, while later degen-

erative changes in the suprarenals led to hypoglycemia, with beneficial results following adrenalin and dextrose therapy.

Davidson[13] (1926) stressed the importance of sodium chloride administration because of the lowering of whole blood and plasma chlorides following extensive burns. Pack and Davis[14] (1930) state that almost without exception in extensive burns the sodium chloride values vary inversely with those for the hemoglobin. Davidson feels that a retention of chlorides occurs in burned patients with diminished plasma chlorides and sodium chloride output in the urine, due to increased protein catabolism, which varies in proportion to the extent of the burn. This persists until the slough separates from the burned area.

Pack[15] (1926) reviewed the conditions influencing the prognosis of burns. Scalds are more serious than burns from dry heat. The extent of surface involvement, especially when multiple areas are burned, is of greater importance than the depth. Any burn involving one-tenth of the body area should be considered as being serious. The large body surface in comparison with the body weight in infants and pre-existing debilitating disease in elderly persons increase the seriousness of any burn. Women do not tolerate burns as well as men. Burns cause more severe general symptoms in blonds than in brunettes. Burns involving the genitalia, anterior thoracic walls, and the region supplied by the trigeminal nerve are more serious than in other areas.

### Results During the Past Ten Years

A study has been made of the burned cases admitted to the Johns Hopkins Hospital during the past ten years. Only recent burns resulting from dry or moist heat have been included in this series. The majority of the burns resulted from accidents in the home. A relatively small number of industrial burns were treated during this period. The youngest fatally burned patient in this series was an infant one month old; the oldest was 82 years of age. The majority of the patients (57.5 per cent) were under 7 years of age.

Two hundred and nineteen (219) burned patients were admitted to the surgical service of the Johns Hopkins Hospital between January 1, 1921, and January 1, 1931. Seventy-three (73) of these patients died, a mortality of 33.3 per cent. Despite the relatively small number of cases, the yearly mortality remained remarkably constant during the first six years of this series. The lowest mortality in this early group was 38.8 per cent in 1924 and 1925; the highest was 45.4 per cent in 1926. During the past four years the mortality has declined.

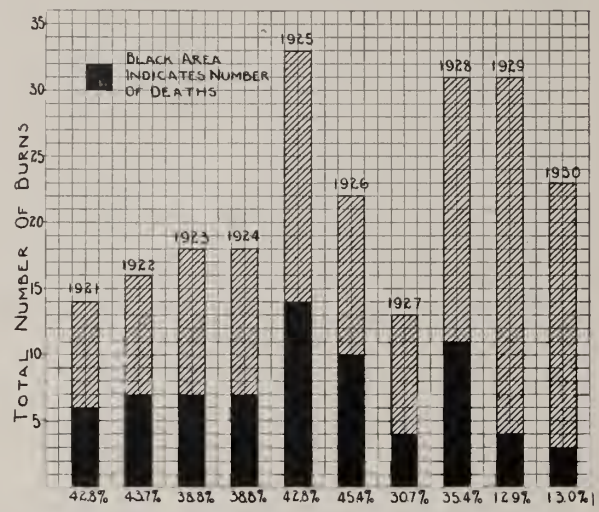


Fig. 1.—Graphic representation of the total number of burns treated annually (1921-1930), and the fatalities during this period. Note the marked reduction in deaths during the past two years.

and in 1929 and 1930, 54 burned patients were treated with only 7 deaths, a mortality of 13.3 per cent.

### Method of Treatment

The local and general treatment of burns in this hospital has been similar to that followed elsewhere until quite recently.

In 1921 extensive burns were treated locally with moist applications. Vaseline gauze, boric acid compresses, continuous tubs, or carron oil were used immediately upon admission. Fluids were given by mouth, subcutaneous injection, and rectal drip. Occasionally small amounts of 5 and 10 per cent dextrose were given intravenously. Saline and Dakin compresses were applied as the wounds granulated, with later application of Thiersch or Reverdin grafts. Fourteen (14) cases were treated with 6 deaths, a mortality of 42.8 per cent.

In 1922 the same treatment was followed with the addition of picric acid applications and Ambrine sprays. Sixteen (16) patients were treated with 7 deaths, a mortality of 43.7 per cent.

This treatment was continued in 1923 and 1924, with occasional blood transfusions. Eighteen (18) patients were treated each year,

and 7 died in both series, giving identical mortalities—38.8 per cent for the two years.

All burns were dressed with vaseline gauze or the patients placed in continuous tubs during the first half of 1925. Tannic acid compresses were used in conjunction with dry heat during the latter part of this year. Fluids were forced in the usual manner. Thirty-three (33) patients were treated and 14 died, a mortality of 42.8 per cent.

In 1926, exposure to dry heat alone was used until the granulating surfaces were suitable for skin grafting. Exsanguination followed by transfusion was done in one case. Intravenous injections of dextrose and transfusions were given more frequently than in previous years. Twenty-two (22) patients were treated and 10 died, a mortality of 45.4 per cent.

This treatment was continued in 1927, when 13 patients were admitted with 4 deaths, a mortality of 30.7 per cent.

The treatment was unchanged in 1928 with the exception that one patient received convalescent burn serum. Thirty-one (31) patients were treated with 11 deaths, a mortality of 35.4 per cent.

In 1929, W. M. Firor[16] made bacteriological studies of the burned areas after treatment with various antiseptics and coagulants. Following extensive studies, he found that a 2 per cent aqueous solution of gentian violet applied at frequent intervals coagulated the burned tissues in a few hours, formed a firm eschar, and markedly inhibited the growth of organisms. Fluids were forced orally, subcutaneously, by rectum, and intravenously. When difficulty was had in keeping the fluid intake at a sufficiently highly level, 5 per cent dextrose or normal salt solution was given continuously through a cannula inserted in a vein. In this manner, the desired amount of fluid could be given continuously over a long period of time if necessary. This method has been followed for the past two years with a most encouraging reduction in the mortality. In 1929, 31 burned patients were admitted, with only 4 deaths, a mortality of 12.9 per cent, and, in 1930, 23 burns resulted in 3 deaths, a mortality of 13.0 per cent.

The following routine is now carried out with all extensive burns. The patient is given an adequate dose of morphia, and shock, if present, is treated by the usual measures. The clothing is cut away, and the patient is wrapped in sterile sheets. Fifteen hundred units of tetanus antitoxin is given and the patient is admitted to the ward, where he is placed on sterile sheets beneath a light frame. By means of electric lights the temperature is kept at 100° F. A 2 per cent aqueous solution of gentian violet is sprayed over the burned area every hour until a firm eschar is formed. The crust is then sprayed every eight hours to prevent secondary infection. The fluid intake is kept between 4000 and 6000 c.c., depending upon the extent of the burn and the size of the patient. Frequent determinations of the hemoglobin are made, and transfusions of citrated blood are given as indicated. Compresses of normal salt solution are begun over a small area after ten days or two weeks and are gradually extended to the entire burn. The crust softens and separates, revealing an epithelialized surface in second degree burns, or a granulating area in third degree burns. Exuberant granulations are inhibited with Dakin solution compresses, or are trimmed away with the scalpel. Small deep grafts are placed over the flexor surfaces to prevent early contractures, and the entire surface is grafted as soon as possible.

DEATHS 1921-1931

| Year | Deaths | Within 36 Hours | From 2-8 Days | After 8 Days | Average Duration Life |
|---|---|---|---|---|---|
| 1921 | 6 | 2-33% | 1-17% | 3-50% | 10 days |
| 1922 | 7 | 2-28% | 3-44% | 2-28% | 6 days |
| 1923 | 7 | 3-44% | 2-28% | 2-28% | 10 days |
| 1924 | 7 | 4-58% | 2-28% | 1-14% | 3 days |
| 1925 | 14 | 8-57% | 5-36% | 1- 7% | 3 days |
| 1926 | 10 | 5-50% | 2-20% | 3-30% | 7 days |
| 1927 | 4 | 2-50% | 1-25% | 1-25% | 4 days |
| 1928 | 11 | 6-55% | 1- 9% | 4-36% | 11 days |
| 1929 | 4 | 2-50% | 1-25% | 1-25% | 12 days |
| 1930 | 3 | 0- 0% | 1-33% | 2-67% | 22 days |
| 1931 | 4 | 1-25% | 0- 0% | 3-75% | 51 days |

Fig. 2.—Table indicating the actual number and percentage of deaths occurring during the three time intervals and the average duration of life in fatally burned patients (1921-1931). Note the high percentage of late deaths and the prolonged duration of life during the past two years.

While a study of the annual mortality from burns indicates the progress which has been made in recent years (see Table 1), a detailed study of the time and cause of each fatality is more instructive by indicating further reductions in mortality which may be made in the future.

Deaths from burns are usually divided into three groups. Fatalities occurring during the first twenty-four or thirty-six hours result from shock rather than toxemia, which causes death during the following six or eight days. De-

layed fatalities after the first week result from infection or exhaustion.

### Analysis of Results

Seventy-seven (77) burned patients have died since January 1, 1921. (This includes four deaths which have occurred during the first nine months of 1931).

Thirty-five (35), or 45.4 per cent, died during the first thirty-six hours. Nineteen (19) or 24.6 per cent, died during the following week, and twenty-three, or 29.9 per cent, died at some later time. With the exception of 1921, when three patients died during the third period, the late mortality during the first nine years of this series was quite low. The majority of the patients died during the first week, and most of these fatalities occurred during the first thirty-six hours. In 1925, fourteen deaths resulted from burns. Eight (8) of these deaths occurred during the first thirty-six hours, five during the ensuing six days, and only one fatally burned patient survived the first week. In the fatal cases the average duration of life varied from three days in 1924 and 1925 to twelve days in 1929.

In 1930 a distinct change was noted. No deaths occurred during the first thirty-six hours; only one patient died during the first week; and the two remaining fatalities occurred on the twenty-eighth and thirty-third day. The average duration of life was twenty-two days. This continued during 1931. One patient died during the first thirty-six hours; no deaths occurred during the ensuing week, and three patients died 29, 32, and 144 days after admission. The average duration of life for 1931 was fifty-one days. (See Figures 2 and 3).

The prevention of early deaths in extensively burned patients by the present methods of treatment has increased the difficulties encountered during the later treatment, in that children now survive the first week with large third degree burns which would have resulted in an early fatality a few years ago. These patients, already debilitated from the initial period of shock and toxemia, with diminishing hemoglobin values and unstable digestive systems, now face a long and hazardous convalescence. Infections beneath the eschar must be recognized and immediately treated. Intercurrent infections are most serious, and otitis media, mastoiditis, furunculosis, osteomyelitis, suppurative arthritis, and pneumonia must be carefully guarded against. The prevention of pressure ulcers is difficult but essential. Contractures are more liable to occur with the present treatment, as involved traction apparatus is irksome to ill patients, and technical difficulties are encountered in restraining extremities which are entirely denuded of epithelium. In very extensive burns it is sometimes necessary to take several sets of grafts from the same unburned area, which prolongs this period of treatment.

A recent case illustrates the late complications which may arise.

E. W. (U-34,393), a white boy, five years of age, was admitted to Johns Hopkins Hospital on December 3, 1930, after receiving a second and third degree burn of the legs, thighs, buttocks, and genitalia, due to the clothing becoming ignited from an open fire. Practically the entire circumference of both lower extremities was burned from the ankles to the anterior superior iliac spines. He was moderately shocked upon admission to the ward, but reacted well, and was placed beneath a light

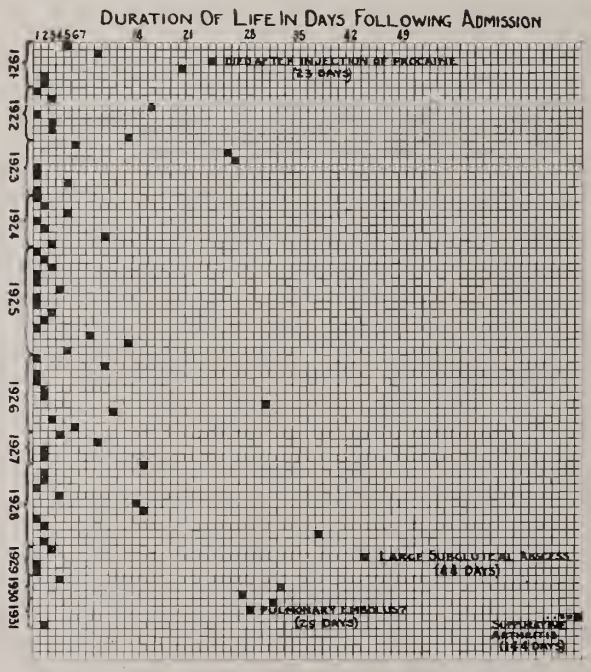


Fig. 3.—Graphic representation of the duration of life in fatally burned patients. During the past few years patients who survived the first twenty-four or forty-eight hours have died relatively late of some intercurrent infection or complication. Note the absence of deaths during the latter part of the first, the second, and third weeks in the recent cases.

frame. A 2 per cent aqueous solution of gentian violet was sprayed over the burned area every two hours, and small amounts of mor-

phia were given. Urinalysis on December 4th showed many red blood cells, granular casts, and 2 plus albumen. On December 5th, the non-protein nitrogen was 60. This acute nephritis, an unusual complication in this series of cases, rapidly subsided and the urinary findings and the blood chemistry became normal within a few days. The fluid intake was kept above 3,000 c.c. a day, and the patient did quite well during the first week. His temperature did not rise above 103° (rectally). The patient was very uncooperative, voiding and defecating on the burned area, which rapidly softened the eschar over the buttocks and perineum, with considerable secondary infection in this region. The child developed a definite psychosis, refused to speak, and kept his head continually covered by the bedclothes. Saline compresses were slowly extended over the legs and thighs with marked temperature rise as each area was softened. The hemoglobin gradually fell to 52 per cent on December 29th, and a transfusion of 300 c.c. of citrated blood was given. This was repeated on January 9th. On January 13th he was suspended from a Balkan frame by a sling to prevent pressure ulcers, and adhesive traction was applied to the ankles to prevent contractures of the knees. A third transfusion was given on March 8th. On March 16th about 100 small deep grafts were placed on the right leg. His condition was so unsatisfactory that only a small area was grafted at this time. On March 30th an early posterior dislocation of the right tibia was noticed and additional weights were added to the traction in order to overcome this. The patient repeatedly tore the adhesive off, and the traction proved unsatisfactory because of the small area of normal skin available. A Steinman pin was inserted through the os calcis on April 15th. At this time it was found that the joint capsule was open and a suppurative arthritis had developed. The patient gradually became weaker, his pulse became more rapid, and he died on April 25th, 144 days after admission.

## Summary

A study has been made of 219 burned patients admitted to the surgical service of the Johns Hopkins Hospital during the past ten years.

Seventy-three, or 33.3 per cent, of these patients died as a result of the burns.

During the first eight years of this series, 165 burned patients were admitted, with 66 deaths, a mortality of 40.0 per cent.

During the past two years, 54 patients were admitted and seven died, a mortality of 12.9 per cent.

The average duration of life following admission to the hospital in fatal cases for the first eight years of this series was 6.7 days.

In 1929 the average duration of life was 12 days. In 1930 this was increased to 22 days, and during the first nine months of 1931 it was 51 days.

## Conclusions

The mortality from burns has been greatly reduced during the past few years by the use of tannic acid and gentian violet sprays. These remedies coagulate the burned proteins and prevent the absorption of toxic products by the circulating blood.

A realization of the importance of preventing concentration of the blood elements by increased fluid intake has also contributed to the reduction in mortality. By the prevention of toxemia the most striking reduction in mortality is now had during the first week following the burn. The majority of the deaths formerly occurred during this period.

The large number of badly burned patients who now survive the early period add additional hazards to the late treatment. Careful nursing, constant attention to posture in order to prevent contractures, and the avoidance of secondary infection are essential.

Only by the prevention of late complications can we hope to bring about a further reduction in the mortality at the present time.

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## THE TREATMENT OF ACUTE ARSENIC POISONING.*

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The extensive use of arsenic preparations in the various industries, as a parasiticide, as an agent for the destruction of rodents and other pests, and frequently as a therapeutic agent, makes the incidences of acute arsenic poisoning a relatively common occurrence. It is not rare for serious or even fatal poisoning to occur in rural sections as a result of the indiscriminate and careless use of arsenical sprays. The cause of the intoxications is often traced to the employment of apparently empty arsenic containers for the storage of food products; but regardless of the source of poisoning, the early recognition and treatment of suspected cases is of the most vital importance to the clinician.

In acute arsenic poisoning almost every therapeutic agent of any supposed or theoretical value has been employed. The results of such treatment have led to rather conflicting statements on the part of many investigators, and the continued employment of certain arsenic antidotes in acute intoxication is more the result of empiricism, than of any proven effectiveness as judged from carefully controlled experiments. The mere fact that a patient recovers from arsenic poisoning following a certain treatment is no indication of the value of such a procedure, and no justification for the assumptions often made. A study of the literature reveals numerous cases of arsenic poisoning in which the patient recovered following the administration of some antidote; a single case observed; no control of any type; and the statement unreservedly made that the supposed antidote is of inestimable value in all forms of heavy metal poisoning.

Semon[1] (1924) treated one case of arsenical jaundice with daily injections of sodium thiosulphate .45 to .5 gm. for nine days, and the patient recovered. He states that mild cases of arsenical jaundice clear up without any medication other than small doses of calomel, yet he concludes the sodium thiosulphate is of real value in counteracting the serious effects of acute arsenical toxemia, and an indispensable adjunct in all cases of acute metallic poisoning. He presents nothing to show that he had ever given the antidote a trial in any other form of metallic intoxication.

The value of sodium thiosuphate as an antidote of arsenic poisoning was first suggested by Ravaut,[2] but renewed interest in its therapeutic value is largely due to the papers of Dennie and McBride,[3] who state that it is a highly efficient and rapid neutralizing agent for all common metallic poisons: arsenic, mercury, lead and bismuth. Haskell and associates[4] have presented experimental evidence to show that sodium thiosulphate is absolutely worthless in the treatment of poisoning produced in dogs by the oral administration of mercuric chloride, although the antidote was administered much more promptly after the poison than would ever be the case clinically.

Experiments conducted in our own laboratories[5] on the value of sodium thiosulphate in acute arsenic poisoning have convinced us that the compound possesses no virtues whatever in acute intoxication. The mortality rate of dogs receiving .5 c.c. of 1 per cent potassium arsenite (Fowler's solution) per kgm. orally was 46.1 per cent; the mortality rate of a series of animals receiving this dose of arsenic and in addition sodium thiosulphate immediately afterward was also about 46 per cent. On the other hand, dogs receiving .75 c.c. or more of Fowler's solution all died whether treated or untreated. The intravenous use of sodium

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thiosulphate in dogs poisoned by the oral administration of .5 c.c. Fowler's solution raised the mortality rate from 46 per cent to 100 per cent, and would suggest that the antidote may actually lessen the chances of recovery. We hesitate, however, to make this statement, but feel that where recovery takes place following sodium thiosulphate therapy, it does so in spite of the antidote, and not as a result.

More recent investigations of Hesse[6] reveal that a new and unrelated sulphur compound, sodium hydrosulphite, of the formula $Na_2S_2O_4$, possesses definite value in the treatment of mercuric chloride poisoning. The validity of Hesse's observations have been attested to some extent in our laboratory by Haskell, who found that if sodium hydrosulphite be given immediately following the oral administration of a fatal dose of mercuric chloride, it will, in the majority of instances, save the animal.

The apparently encouraging results obtained by the use of this drug in mercuric chloride poisoning prompted us to carry out an investigation as to its value in acute arsenical poisoning.[7] All experiments were performed on

TABLE I[7]

Results Following the Immediate Use of Sodium Hydrosulphite in Poisoning from the Oral Administration of Potassium Arsenic Solution

| Weight of Dog. Kg. | Solution of Potassium Arsenite-U. S. P., Cc. per Kg. | Sodium Hydrosulphite, Mg. per Kg. | Results |
|---|---|---|---|
| 10.1 | 1 | 100 | Survived* |
| 7.27 | 1 | 0 | Died 8 hours |
| 5.0 | 1 | 100 | Survived* |
| 6.6 | 1 | 0 | Died 9 hours |

*If animal was living at the end of two weeks, it was reported as survived.

apparently healthy dogs, following a twenty-four hour period of starvation, so that the presence of food would not interfere with absorption of the arsenic preparation. To prevent vomiting, 10 mgm. of morphine sulphate per kgm. of body weight was injected subcutaneously, and followed in one-half hour by the oral administration of the poison. As a source of arsenic we employed solution of potassium arsenite U. S. P. (Fowler's solution), which was administered from a pipette into a funnel connected with a stomach tube, and rinsed down in 25 c.c. of tap water. The mortality of a series of thirteen dogs given .50 c.c. per kgm. was 46.1 per cent, and that of twenty-four dogs given .75 c.c. per kgm. 100 per cent.

In all animals treated with sodium hydrosulphite, .75 to 1 c.c. per kgm. doses of Fowler's solution were employed. The antidote, 100 mgm. per kgm. in 10 per cent solution was

TABLE II[7]

Results Following the Use of Sodium Hydrosulphite in the Treatment of Dogs Poisoned by the Oral Administration of Potassium Arsenite Solution

| Weight Kg. | Arsenic Solution, Cc. per Kg. | Sodium Hydrosulphite, Mg. per Kg. | Time Interval in Minutes | Result 24 Hours |
|---|---|---|---|---|
| 12.2 | 1 | None | -- | Dead |
| 12.4 | 1 | None | -- | Dead |
| 10.8 | 1 | None | -- | Dead |
| 4.37 | 1 | None | -- | Dead |
| 14.0 | 1 | 100 | 30 | Dead |
| 13.5 | 1 | 100 | 30 | Dead |
| 5.0 | 1 | 100 | 30 | Dead |
| 3.45 | 1 | 100 | 30 | Dead |
| 4.8 | 1 | 100 | 4.75 | 6 Days |
| 5.1 | 1 | 100 | 4.25 | Survived |
| 15.8 | 1 | 100 | 3 | Survived |
| 3.75 | 1 | 100 | 3 | Survived |
| 10.3 | 1 | 100 | 10 | Dead |
| 11.7 | 1 | 100 | 10 | Dead |
| 13 7 | 1 | 100 | 10 | Dead |
| 11.4 | 1 | 100 | 9.25 | Dead |

given immediately afterwards and rinsed down with 25 c.c. of normal hydrochloric acid. The results are shown in Table I, and indicate that

TABLE III[7]

Results Following the Use of Sodium Hydrosulphite in the Treatment of Poisoning from the Oral Administration of Potassium Arsenite Solution—U. S. P., 0.75 Cc. per Kilogram of Body Weight (Dogs)

| Weight Kg. | Arsenic Solution, Cc. per Kg. | Sodium Hydrosulphite, Mg. per Kg. | Time Interval in Minutes | Results |
|---|---|---|---|---|
| 4.0 | 0.75 | None | -- | Died 48 hours |
| 3.86 | 0.75 | None | -- | Died 8 hours |
| 3.8 | 0.75 | None | -- | Died 24 hours |
| 6 05 | 0.75 | None | -- | Died 24 hours |
| 8.9 | 0.75 | None | -- | Died 24 hours |
| 10.9 | 0.75 | None | -- | Died 24 hours |
| 14.6 | 0.75 | None | -- | Died 24 hours |
| 18.7 | 0.75 | None | -- | Died 24 hours |
| 5.7 | 0.75 | 100 | 5 | Died 36 hours |
| 6.1 | 0.75 | 100 | 5.75 | Survived |
| 13.05 | 0.75 | 100 | 6 | Survived |
| 10.3 | 0.75 | 100 | 6 | Survived |
| 8.07 | 0.75 | 100 | 6 | Survived |
| 8.7 | 0.75 | 100 | 6 | Survived |
| 8.5 | 0.75 | 100 | 10 | Survived |
| 8.4 | 0.75 | 100 | 10 | Survived |
| 6.9 | 0.75 | 100 | 10 | Survived |
| 8.3 | 0.75 | 100 | 10 | Survived |
| 8.08 | 0.75 | 100 | 10 | Survived |
| 7.7 | 0.75 | 100 | 15 | Died 24 hours |
| 7 9 | 0.75 | 100 | 15 | Survived |
| 8.5 | 0.75 | 100 | 16 | Died 24 hours |
| 5.3 | 0 75 | 100 | 16 | Died 24 hours |
| 3.66 | 0.75 | 100 | 20 | Died 48 hours |
| 4.1 | 0.75 | 100 | 20 | Died 24 hours |
| 6.7 | 0.75 | 100 | 11 | Survived |

the compound possesses definite value if administered immediately following the oral administration of a fatal dose of potassium ar-

senite. In all experiments, control and treated animals were run simultaneously.

In clinical cases of arsenic poisoning, considerable time often elapses before the case comes under observation. It was of interest, therefore, to determine what effect delayed treatment would have on the mortality rate of dogs poisoned with a fatal dose of arsenic. The results shown in Tables II, III, and V indicate the necessity of early treatment, for the antidote is ineffective after the lapse of fifteen minutes. It further indicates the rapidity with which arsenic preparations are absorbed from the gastro-intestinal tract. The time interval of effective treatment will vary considerably, depending upon the amount of arsenic taken, its concentration, and the amount of food present in the stomach at the time. While it is often difficult to secure experimental evidence to justify certain conclusions, it is believed that sodium hydrosulphite possesses a definite beneficial action in preventing the serious intoxication resulting from sublethal doses of potassium arsenite, and the time interval of effective treatment would be considerably prolonged with weaker concentrations of arsenic, and by the presence of food in the stomach.

The antidote itself is of low toxicity. Dogs recover from the oral administration of 1 gm. per kgm. Gross and histological studies on animals which have received large doses of sodium hydrosulphite reveal no pathological changes.

Mortality Table IV

| No. of Animals | Potassium Arsenite 1% cc. per Kgm. | Sodium Thiosulphate mgm. per Kgm. | Mortality |
|---|---|---|---|
| 13 | 0.50 | -------- | 46.1% |
| 6 | 0.75 | -------- | 100. % |
| 13 | 1.00 | -------- | 100. % |
| 6 | 0.50 | 100 to 200 Vein | 100. % |
| 14 | 0.50 | 500 mgm. orally | 46. % |
| 6 | 1.00 | 100 to 1,000 Vein | 100. % |

Mortality Table V
(Orally)

| No. of Animals | Potassium Arsenite 1% cc. per Kgm. | Sodium Thiosulphate 100 mgm. per Kgm. | Mortality |
|---|---|---|---|
| 12 | 1.00 | -------- | 100 % |
| 8 | 1.00 | Immediate | 0. % |
| 4 | 1.00 | 5 min. | 25. % |
| 6 | 1.00 | 30 min. to 1 hr. | 84. % |
| 8 | 1.00 | 10 to 30 min. | 100. % |
| 8 | 0.75 | -------- | 100. % |
| 12 | 0.75 | 5 to 11 min. | 8.3% |
| 7 | 0.75 | 11 to 15 min. | 71.4% |

We feel that the compound deserves a trial in suspected cases of acute arsenical poisoning.

## Summary

Whatever might be the virtues of sodium thiosulphate in arsenical dermatitis, subacute or chronic arsenic poisoning, there seems to be little doubt that it is valueless against the poisoning produced by the oral administration of potassium arsenite.

Sodium hydrosulphite, however, appears to be of definite value, if given within a short time after the ingestion of a fatal dose of arsenic. The use of sodium hydrosulphite in acute arsenic poisoning is not recommended as a measure intended to supplant gastric lavage, the importance of which is unquestioned in poisoning from any orally administered drug. As an adjunct to the latter, however, the compound may prove quite effective, particularly in those cases in which the presence of food in the stomach might embarrass the progress of lavage. The immediate administration of appropriate amounts of sodium hydrosulphite may serve to fix or render unabsorbable the arsenic until thorough lavage can be effected, if not to be solely responsible for the patient's recovery.

We wish to emphasize the danger of drawing conclusions as to the value of a supposed antidote solely from clinical observation when many other factors may be concerned in bringing about recovery of the patient. While the antidotes themselves may do no harm, too much enthusiasm in their use often leads to neglect of other more rational therapeutic procedures.

The author wishes to thank Mr. J. H. Meadow and Mr. J. T. O'Neal for their services in carrying out some of the experiments incident to this investigation.

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## THE BLOOD TRANSFUSION.*

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The transfusion of today, with its modern methods permanently established by Crile, since more or less perfected by Lindeman, Lewishon and Unger, can only excite wonder and a certain degree of admiration for the courage and skill of our forebears, who, in total ignorance of aseptic methods and working with inferior instruments, were able to accomplish some results.

We must respect the foresight of those who attempted to save the life of Pope Innocent, the Eighth, in 1492; of Jean Baptiste Denney's transfusion of man with sheep's blood in 1667; Blundell's experimental work on dogs, using the syringe principle, 150 years later, in 1818,—nor would we be just did we fail to express our appreciation of Bishoff in his use of defibrinated blood in 1835.

Deficiencies in their knowledge may have been responsible for their courage as well as their failures, and, at the end of an unsuccessful period, transfusion was stamped as a dangerous operation, eliminating it from practical therapeutics until some future generation's interest in it would again be revived, and success, failure and condemnation would again be repeated.

Landsteiner and Shattock, working independently in 1900, demonstrated the presence of isoagglutins in serum and isoagglutinogens in the red blood cells. 1901 saw Landsteiner's three blood groups, immediately followed by Decostello, Sterile, and Heckton's confirmation with addition now known as group four. Crile's epoch making work in 1906 placed us in a pathway of light, immediately to be further illuminated by Jansky and Moss' practical classification of the present four groups.

Huston and Lewishon in 1914 demonstrated sodium citrates combining power with blood calcium (the most component element in blood clotting) forming double soluble salt, rendering the calcium inert. Although nontoxic in a dilution that was still effective certainly was another great forward step, and the first transfusion with citrated blood by Agote, of Buenos Aires, this same year marked the beginning of the present state of the operation.

That sodium citrate renders the corpuscles more fragile, diminishes the complement of the donors serum, reduces the opsonic index as suggested by Drinker and Brittingham, later commented upon by Colebrook and Storer, certainly has not met with sufficient proof to place the citrate transfusion in bad repute. Just as Unger has insisted that the phagocytic power of the leukocytes is diminished, the latter I hope to show is without foundation later in this paper. So much for history.

May I now briefly discuss methods, selection of donors, including blood typing; indications; amount of blood to be transfused; reactions, immediate and delayed; complications and the life of the transfused corpuscle.

I shall not burden you with a lengthy discussion of methods. The three commonly in use are familiar to us all; the Kempton Brown, direct, and citrate. When reference to direct transfusion is made, only one is considered, that in which the blood is withdrawn from the donor's vein and injected into the recipient's vein by means of the numerous transfusion outfits on the market at this time. The patient and donor are lying in close proximity to one another. When used by operators familiar with them, little can be said of the value of one over the other. Each has its following, and justly so. The citrate method, I believe, is preferred where the host has a blood stream infection, as it does not subject the donor to unnecessary risk. From the standpoint of reactions, Pemberton's, Drinker's and Brittingham's analysis of the percentage and the degree; 66.6 in the direct, and 66.4 in the citrate, likewise noting no difference in the severity, it seems a matter of adopting the procedure one is most familiar with. In the Crile Clinic, where the Kempton Brown method is used exclusively, I was unable to obtain this information, yet, as it requires a trained personnel, it certainly is not practical for the average one of us.

Indications:

1. Sudden loss of blood from any cause.
2. Prevention of surgical shock, pre- or post-operative, that is related to hemorrhage, acute or chronic.
3. Chronic hemorrhagic conditions.
4. A pre- or post-operative condition where the bleeding and clotting time has been found delayed.
5. Blood dyscrasias, pernicious anemia, leukemia, secondary anemia.
6. Sub-acute bacterial infection.
7. Acute septic condition.
8. Typhoid with hemorrhage.

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9. Streptococcic and staphylococcic infection of blood stream.

10. Angina pectoris resulting from low blood presure secondary to anemia.

11. Illuminating gas poison.

Feinblatt recognizes the following additions, as pellagra, nephritis, eclampsia, tropical sprue, marasmus and intestinal intoxication in infants, while Mosenthal and Ashe have published excellent results from transfusions in Bright's disease with anemia.

In the first four groups large transfusions are indicated of 500 c.c. or more, as the object is to increase blood volume and oxygen carrying power in the red blood cells. However, an exception may be noted in this as in group one where hemorrhage is from duodenal or gastric ulcer. Transfusion under these conditions should be small. Not over 300 c.c. should be used as the elevation of blood pressure following the transfusion is apt to promote more bleeding rather than control it. In the last group the transfusion should be limited to 300 c.c. and given at four day intervals. I will discuss this in more detail later in the paper.

Selection of donors and blood typing: As so well spoken by Loyed, donors should be male between the age of twenty and thirty years, with a normal blood pressure, free of disease and not subject to syncope. Too much emphasis cannot be laid on grouping and cross matching, particularly the latter, before each transfusion. No donor should be used within six months for the same recipient. One has only to familiarize one's self with the literature, which has now become rather voluminous, to respect the dangers attended and the fatal outcomes where dependence was placed in the grouping alone, and now I find no better place to condemn the much spoken of "Universal Donor." It does not exist. When one sees reports of ten deaths reported by use of the universal donor in the past two years, and probably many more which for some reason or other have never been published, is not skepticism justified? Levine and Maybee called our attention to this ten years ago; Freeman and Whitehurst shortly afterward. Butka has recently reported a fatality. Parr and Krischner, using of the universal donor, although cross matching revealed no agglutination on either side, had a resulting death of the recipient in just a few hours—presenting every symptom of receiving incompatible blood. Did Pemberton have this in mind also when he advised against the use of the professional donor, as they are usually universal, on account of the wide incidence of syphilis found in them?

Although frequently overlooked, we must not forget the possibility of transmission of malaria. Ernst Flaum has recently reported such an accident, while Oehlecker goes so far as to reject any donor that has been in a malaria infected country within a period of ten years if it is possible to obtain another suitable one.

What are some of the causes of reactions? Would it not be well to divide them into two classes: first, those resulting from a dull needle which breaks down portions of the venous wall, setting adrift small particles of tissue which may manifest itself in the form of small embolus or a foreign protein. Certain types of rubber tubing have been held responsible by Bushman and Stokes. The latter reaction can be avoided by boiling the tubing in 18 per cent sodium hydroxide before it is sterilized for the transfusion. Cold blood certainly has to be considered. This very frequently happens in the citrate method where the operator is poorly equipped and considerable time elapses before the transfusion is completed; likewise, the blood usually comes in for a great deal of handling with unnecessary exposure to air. Although these reactions are not severe, I mention them not so much from the danger associated with them as the discomfort they produce to the recipient.

It is the anaphylactic or albuminoid reaction that is of so much interest and importance. That our knowledge is limited as to the fundamental principles entering into this type of reaction cannot be denied, yet there are certain principles involved with which we are familiar, and I want to discuss them at this time. Ottenberg and Lidman called attention years ago to the frequency of the post-transfusion reaction following second or subsequent use of a given donor to a given host. Meleney, Fortune, Ferry and Stearns concluded that the subsequent donation of blood by a given donor to a given recipient tends to increase the frequency of reactions in direct proportion to the number of transfusions, while McClure and Doan, in a most excellent monograph covering a large series of transfusions, find it very difficult to obtain a satisfactory donor for those cases that have received a large number of

transfusions. Is it that the recipient develops a new agglutinative sera and hemolytic power to the donors cells, as suggested by Minot and Lee, which Thalhimer felt that he was able to prove later in his warning against the use of the same donor more than once; and does not Babcock's observations and conclusions that isohemolysin and isohemoagglutinin properties developed in the recipient as the result of the donor's blood bear out McClure's and Doan's statement? One might ask why isohemolysis should enter into the practical application of blood grouping as isoagglutination practically always precedes it. Yet when we see cross agglutinations, which appear perfect, followed by severe reactions, one wonders at Kolmer's statement that isohemolysins may occur in seras which do not contain isoagglutinins, as in carcinoma, where the serum of the patient may be hemolytic and result in intravascular hemolysis despite the most careful and apparently satisfactory preliminary tests. That sera of a low titer strength has entered largely into the cause of error where grouping was depended upon cannot be questioned, and Paul Morville, in his most excellent contribution to this phase of transfusion, has definitely proved that sera agglutinative powers varied inversely with its age, although kept in air tight containers with a preservative. Fresh sera will agglutinate 1:32, while one that has been kept over a period of weeks or months may be as much as 1:132. Naturally the length of time required to produce agglutination varies in proportion.

All of us have given large transfusions which were followed by a severe reaction, and three or four days later find that, instead of help to the anemia, we have both a relative decrease in the red cell count and the hemoglobin. In other words, we have made the condition worse by trying to improve it. The writer has never experienced favorable results following severe reactions accompanied by chills and marked increase in temperature. That incompatible blood is the responsible factor cannot be doubted, although we may classify it as anaphylactic shock or an albuminoid reaction, yet the chill and temperature resulting from the liberation of hemoglobin is not unlike the chill produced by malaria, while further injury may be incurred through the dissolved foreign blood albumin resulting from the disintegration of the erythrocytes. The ability of the kidneys to respond to this emergency and carry off the foreign products of decomposition enters largely into the anuria, possibly the gravest complication, which I will refer to shortly.

We are indebted to Erich Hempel for his description of symptoms dependent upon the areas involved, as the feeling of oppression and difficult breathing, cyanosis, accelerated respiration, which may be explained by the consequence of obstruction in the lesser circulation, or to obstruction of the pulmonary capillaries with masses of red cells and their stroma, or by pale or hyaline thrombi as the increase volume of erythrocytes is attributable to hemolysis. Lumbago is due to emboli of the renal capillaries, while renal emboli with infarct formation lead to various urinary phenomena —albumin, cylinders, erythrocytes, displacement of the uriniferous tubules. Oxygen carriers are necessarily lost by hemolysis while hemoglobinemia with icterus and hemoglobinuria appear as the result of hemolysis and agglutination. The whole complex of the observed disturbance points to the vegetative nervous system, especially the sympatheticus. Unlike the action of adrenalin, producing palpitation of the heart, increased blood pressure, paleness, uneasiness, increased respiration due to exclusive action on the peripheral nerve endings of the sympatheticus, the albuminoid products of decomposition appear to affect the mid-brain, the thalamus opticus and the central gray matter of the third ventrical, where the large basal ganglia are located.

Weak stimulation by these products produces irritation, while stronger stimulation leads to paralysis. The dominant phenomena are those of the vasomotor centers in the corpus hypothalamicum. The varions arresting and exciting influences proceed from here to the vessels. Here is the cause of paleness, increased blood pressure and headache in mild cases, and cyanosis and lowered blood pressure in severe ones. A rise and fall in temperature is a sign of involvement of the sympathetic heat regulating center in the tuber cinereum; sweating results from stimulation of the secretory center in the hypothalamus. Chilling and rigor are due to the effect on the pilomotor center and the vasoconstrictor center, while excitement of the vagus may be due to the mid-brain.

The effect of transfusion on the bone marrow, stimulating the erythrogenic center with a corresponding increase in the red blood count, rather than from the volume of blood received,

is clearly demonstrated in this case. A case of interstitial nephritis, which had existed over a period of years, and had left a pyonephritis which necessitated the removal of the kidney, came under my observation. As the result of the infection she had developed a severe secondary anemia. Hg. 20, red cells 1,800,000, and a systolic pressure of 190, with a general edema and myocardial failure, was noted. Her condition became progressive, although she was treated vigorously along the line so familiar to all in these cases. Realizing the grave effect of anemia on the heart muscle, as suggested by Paul White and Doushong, and noting the results obtained in Bright's disease by Mosenthal, Ashe, Epstein and Clausen, transfusion was turned to as a last resort. The patient, a woman 44 years of age, was admitted to the hospital with a systolic pressure of 190, diastolic 120. She was extremely nervous and was given ¼ morphia before the transfusion was started. She received 300 c.c. of citrated blood with no evidence of reaction during the procedure. Twenty minutes afterwards she complained of a severe headache; pulse bounding in character; B. P. 290/210. Within the next hour she showed evidence of right-sided dilatation, and 300 c.c. of very dark blood was removed. It was followed by a drop in B. P. to 160/100, and two hours later her pressure was 140/80. She passed an uneventful night, requesting breakfast the next morning. The day was uneventful. Blood chemistry NPN 185, urea 79, creatin 5.9. Urine loaded with albumin and casts; out-put 14 ounces. The next day was followed by another rise in pressure to 240, and 400 c.c. more blood was removed; this was not near so dark as that of the night before. She lingered until the seventh day and died of anuria and cerebral edema.

I wish to call your attention to the blood picture. Third day after transfusion, red cells 2,350,000; Hg. 28 per cent; fifth day red cells 3,200,000; Hg. 42 per cent. Blood was removed both from the vein and finger for counting in each case. That transfusion hastened the outcome in this case cannot be denied. She died of a tubular nephritis. Was this a reaction resulting from typing? It certainly did not present the physical signs of it, as there was only one degree rise of temperature, nor was there a chill. Substernal pain was present, which was explained by dilatation of the right heart. Yet it does not coincide with Mosenthal and Ashe in their statement that these cases presented no evidence of pressure changes after receiving as much as 500 c.c. of blood. Yet the kidney changes—that of a tubular nephritis with hemoglobin infarction—certainly suggest that all was not compatible between the recipient's and the donor's blood. Yet this is exploded by the usual drop in red count and Hg. where anaphylactic reactions occur. Although 700 c.c. of blood was removed, we have evidence that there was a marked stimulating effect on the bone marrow from the above blood picture, as her total red count was nearly doubled, also the Hg., within four days, although twice as much blood was removed as she received.

That transfusion offers more in the treatment of blood stream infections than any other therapy we have to offer at this time cannot be denied. When one sees three cases of streptococcus hemolyticus septicemia in which the organism was isolated on many different occasions from the blood stream, each individual case manifesting all the physical findings and symptoms, as chill, temperature, leucocytosis, respond with negative blood culture, normal temperature, and leave the hospital with a normal blood picture except the anemia resulting from this condition, and after two years are in normal health, are we not justified in feeling that the transfusion gives hope to what a few years ago was a hopeless condition? It was extremely interesting to note the temperature and leucocyte curve in these three cases. Following each transfusion there was a mild chill, with rise in temperature averaging two degrees. The following day the temperature was normal in the morning, with rise in the afternoon, but not over two degrees. On the second and third days the temperature curve increased, to again return to normal after the transfusion on the fourth day. This continued throughout the illness, becoming less after each administration of blood, until the temperature became normal, and, after ten days with no return, these patients were permitted to leave the hospital as they were free of symptoms and the cultures negative.

What was the blood picture? Each case was attended by a rise in the leucocyte count until it averaged 20,000, while the polynuclear count gradually fell from an average of 92 per cent to 80 per cent; afterward the total and differential count assumed a normal picture. There was little increase in the red cells and

hemoglobin until after the third transfusion, when a gradual rise was noted. However, neither patient assumed a normal red count and hemoglobin under six months, and one required twelve months.

Is it not correct to assume from such observations that the leucocytes still maintain their phagocytic powers although exposed to sodium citrate? That the latter has any germicidal properties has been clearly demonstrated by the writer, in treating the streptococcus and staphylococcus to concentrated solutions of this salt without any inhibition of growth whatever. Do the donor's cells possess phagocytic ability, or is the stimulation of the host's granular myocytic center a point that calls for further investigation.

Those of us who have had a bit of experience in transfusion have undoubtedly been disappointed in the results obtained following the use of large quantities of blood in pernicious anemia, myelogenous leukemia, and aplastic anemias, and cases of purpura hemorrhagica. After failing to gain any benefit from a transfusion of over 450 c.c. I resorted to the smaller —not over 300 c.c.—given at four day intervals, and some results were obtained. It was difficult to offer an explanation of this. However, Carl Riech's excellent thesis on the use of the reticulocyte count in a similar manner to Robertson, Krumbhaar and Chanutin as an index to bone marrow activity, found that after the large transfusion they were diminished and these patients did badly. Vogel and McCurdy likewise experienced similar results. I cannot do better than to quote Riech's conclusions: "In severe cases of pernicious anemia the marrow is nearly exhausted. The stimulus of the anemia with its oxygen lack is just enough to keep it functioning. A sudden lowering of the stimulus is produced by a large transfusion, and the activity of the marrow markedly depressed. It follows, therefore, that in cases of pernicious anemia with a feeble reacting bone marrow, as indicated by the reticulocyte count, small transfusions are preferable to the larger ones."

The effect of transfusions on anginal pain associated with anemia is forcibly brought to us in a case of myelogenous leukemia admitted to my service some months ago. That the opening of the coronary valves are dependent on the diastolic pressure has long since been brought to our attention by Paul White and Herrick, as in the severe anemias the diastolic pressure is low and often absent, these cases frequently are victims of angina. A woman with an advanced myelogenous leukemia, with a red cell count of 2,000,000, systolic pressure 70, and an absence of diastolic pressure, accompanied by pain anginoid in character which could not be relieved by nitrites and morphine, was given 300 c.c. of citrated blood. At the completion of the transfusion her diastolic pressure was 30; during the afternoon her pressure assumed a ratio of 100/45; she became free of pain and was able to walk around the wards the next day, and left the hospital one week later to continue her treatment of the leukemia by radiation. Can any therapy offer as much in this condition—the elevation of pressure by blood volume and the direct effect of the transfusion upon the anemia?

Anuria is possibly the gravest complication associated with transfusion. When one experiences this condition twice, then reads reports of it from Bancroft, Bordely and Curtis in this country; Witt, of London, Berard, of Paris, one is compelled to be cognizant of the fact that such a condition is to be reckoned with, nor can its seriousness be minimized. That it is the results of incompatible blood, producing a tubular nephritis with hemoglobin infarction of the uriniferous tubules cannot be questioned. Eleven of the sixteen reported cases died with a uremia, while two recovered after decapsulation; the remaining four recovered after many weeks. Clough and Clough have reported one case that the anuria was overcome after forty-eight hours, with a complete recovery. Partial anurias have in many instances recovered; however, where edema begins to manifest itself, decapsulation offers more than any known procedure at this time.

What is the life of the transfused corpuscle, and does it actually perform any function after its reception by the host? Winifred Ashby many years ago was able to prove that the life of the transfused corpuscle was over thirty days, yet at this time neither he nor Archibald, Primrose, Robertson or Watson were able to definitely state that the effect of the transfusion was other than a purely mechanical part on increasing the bulk of the depleted blood. Wildegans has recently thrown considerable light on this much discussed subject in that he has definitely shown that although hemolysis begins at the end of the first week, reaching its maximum the latter part of the second,

with a gradual decline during the third week, the greater part of the corpuscles live in the body of the host several weeks; they do not become an integral part of the host's body, but like all cells finally wear out and die. They circulate in the vessels of the host and act for the most part not unlike the blood that is already there. Likewise, they take part in gas exchange and contribute to enlarging the respiratory surface. Unlike the author, he feels that where there is a marked reaction accompanied by chill with a marked rise in temperature, the transfusion is followed by a decrease in the total erythrocyte count and hemoglobin, although there may not be any definite effect on the nitrogen excretion in the urine. At the same time the residual nitrogen of the blood may give no evidence of anomalies of albumen catabolism or an increase in albumin metabolism in the circulation. Residual nitrogen remains the same, but oxygen carrying capacity of the blood is increased.

Freund feels that transfusion has a definite stimulating effect of the hematopoietic center of the host, and is likewise strongly of the opinion that wherever there is a destruction of corpuscles in the circulation, although they may be homologous ones, it is attended by temperature.

## Conclusions

1. From the degree and severity of reactions, one may select either the citrate or direct method.

2. The selection of donors from typing without cross agglutination is condemned; likewise, all typing should be carried out with fresh sera. No donor should be used under six months with the same recipient.

3. The albuminoid or anaphylactic reactions acompanied by marked increase in temperature with chills decrease the red cell count and hemoglobin of the recipient, and they are the result of errors in cross matching or blood typing.

4. Transfusions of over 300 c.c. in primary anemias are not followed by an increase in the red cell count or hemoglobin of the recipient, and often is followed by harmful results.

5. Transfusion has a definite stimulating effect on the hematopoietic center, as demonstrated in a case report.

6. Results may be accomplished by small and frequent transfusion in blood stream infections.

7. Cases of angina pectoris with an absence of or a very low diastolic pressure accompanied by severe anemia are benefited by transfusion.

8. In hemorrhage accompanied by shock, or in marked secondary anemia where operative procedure is necessary, transfusion of 500 c.c. or more, as indicated, is used, as we wish to restore blood volume and oxygen carrying capacity.

9. Anuria is the result of incompatible blood. It is an exceedingly grave condition, and decapsulation offers more than any other procedure.

As I go back over this paper to see what it is all about, I find that there is a thread of thought, rather slender at times, I admit, that binds together the seemingly disconnected pieces out of which it has been constructed. The motive seems to be not to declare so much what we know concerning blood transfusion, the cause of immediate and delayed reactions and complications, as to point out certain gaps in our knowledge—certain problems that still await solution. Also discussed are the causes of reactions, either anaphylactic or albuminoid in nature, the pathology, the disease manifestations, the cause of anuria; likewise the pitfalls of blood grouping and cross agglutination, and the mystery of transfusion on the erythrogenic center. Let us realize there is much need for cooperation between the transfusionist, the pathologist, experimental physiologist and haematologist. Intensive, concerted investigation will surely bring forth results.

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*Driver Building.*

## LUDWIG'S ANGINA.*

R. M. DEHART, M. D., Floyd, Va.

This condition was observed as early as 1836 by Dr. Ludwig, whose name it bears, and at that time he contributed to his local medical journal an article describing it to be "an illness which, in spite of all local and general treatment, always ends fatally." He and many of his contemporaries observed this disease exceedingly well.

Ludwig's differential diagnosis from other throat infections is still valuable. It follows:

"1. Comparatively slight inflammation of throat itself; 2, the peculiar wooden hardness of the cellular tissue, on which an impression cannot be made; 3, the hard swelling under the tongue and the swelling on the inner border of the mandible; 4, the well defined border of hard edema in the neck; and 5, the absence of infection in the regional lymphatic glands."

Ludwig's angina is an inflammatory process, involving the cellular tissue of the floor of the mouth and the submaxillary region of one or both sides of the neck. It affects the connective tissue spaces, being a cellulitis, not a lymphangitis or lymphadenitis: the lymph nodes and the submaxillary and sublingual salivary glands are not primarily diseased but may be invaded secondarily. It involves both the sublingual and the cervical tissues: it is not confined to either. It may begin in either situation, but until it spreads from the submaxillary tissues to the sublingual tissues, or in the reverse direction, from the sublingual tissues to the submaxillary region, it does not constitute Ludwig's angina. As long as it is confined solely to the submaxillary and cervical tissues, it is merely a submaxillary or a cervical cellulitis; as long as it is confined to the sublingual tissues, it is merely a sublingual cellulitis. It is the simultaneous involvement of the submaxillary and the sublingual tissues

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., September 21, 1932.

in a confluent septic cellulitis that warrants the condition being recognized as a distinct clinical entity.

The present state of the knowledge about Ludwig's angina should stimulate the activity of the physician, and then the mortality, which is still very high in this dreaded disease, would be reduced. It is very essential that the physician recognize it in its earliest stages because he is usually the one who sees the case first. What the experience should teach, above all, is the prophylaxis of the disease. The physician should cooperate with the dentist, and the latter should think twice before he extracts a tooth or a root or makes an injection whenever he sees the hard swelling without fluctuation. His activity in this direction is likely to cause the complication.

The etiology of Ludwig's angina can usually be traced to some disease of the oral cavity, as carious teeth, ulcerated mucous membranes, peridental abscesses, wisdom teeth breaking through, necrotic alveola, peritonsillar abscess following tonsillectomy and Vincent's angina; dental infections (with or without trauma from extraction of teeth) is one of the most frequent causes of Ludwig's angina, according to Ashhurst. The streptococcus is the most frequent offending organism.

Since the infection of the oral cavity is the most frequent cause of Ludwig's angina, it is well to have clearly in mind the pathologic lesions present and the influence exerted on the spread of infection by the surrounding anatomic structures.

*Anatomical Considerations.*—In reviewing the anatomy of the region, stress should be given to the character and relationships of the mylohyoid muscle. This muscle forms a floor for the cavity of the mouth, a diaphragm covered by dense fascia superficially, which acts as a distinct barrier to the extension forward and externally of any infection in the floor of the mouth. It arises from the mylohyoid ridge of the mandible and extends from the symphysis in front to the last molar tooth behind. The posterior fibres pass inward and slightly downward, and are inserted into the body of the hyoid bone. The middle and anterior fibres are inserted into a midline raphe. The relations of the mylohyoid muscle are given as follows: by its superficial surface—with the platysma, the anterior belly of the digastric, the suprahyoid aponeurosis, the submaxillary gland, submental vessels, and mylohyoid vessels and nerve; by its deep surface—with the geniohyoid, part of the hyoglossus and styloglossus muscles, the hypoglossal and lingual nerves, the submaxillary ganglion, the sublingual gland, the deep portion of the submaxillary gland and duct, the sublingual and ranine vessels, and the buccal mucous membrane.

*Pathological Considerations.*—At the time of operation there is usually no abscess. Only a few drops of pus, if any at all, are seen—occasionally in the submental region, but more commonly in the submaxillary region. What is present is a tense edema. The patient's symptoms undoubtedly cannot be accounted for by the edema superficial to the diaphragm of the mylohyoids. What does push up the patient's tongue, thus causing the mechanical symptoms, is the marked edema of the loose cellular tissue in the floor of the mouth, i. e., on the oral side of the mylohyoid diaphragm.

It is this pressure that must be released. Here, then, is the crux of the surgical treatment of Ludwig's angina: it is not incision and drainage that is most important, but rather release of pressure.

*Treatment.*—After the diagnosis of Ludwig's angina is made there should be no time lost in instituting drainage of the affected part.

When cellulitis occurs in other situations, especially in the limbs, early incision is important, but you can temporize more in cases of this type with poultices than in cases of Ludwig's angina. Patients with Ludwig's angina are threatened with suffocation. The tongue is pushed up against the roof of the mouth, and they are forced to keep the mouth open in order to breathe. Tracheotomy is sometimes necessary, and the instruments for this operation should be kept ready at all times in case this emergency occurs.

Sites of Incisions.—(a) The first incision should be made in a midline between the chin and the hyoid bone, and the knife should pass directly through the median raphe, and through this incision a long curved forceps is passed and the wound opened thoroughly and a gauze or rubber drain inserted.

(b) The second incision is made anteroposteriorly well below the angle of the jaw of the side affected, but through the skin and platysma only. A long curved forceps is then thrust into this incision, and the submaxillary space opened thoroughly. A drain is placed in this, as in the first incision. Ashhurst extends both incisions through the mucous membrane into the mouth, and places a drain from

inside of the mouth down through the wound. Many surgeons differ in this part of the operation, and only make an incision as described above.

(c) The third incision is made in case there is any infection on the opposite side of the neck.

These incisions can be made without fear of causing hemorrhage or injury to the nerves. In desperate cases, they may be made even without any anesthetic. In most cases, however, novocain infiltration in the skin or gas is used as an anesthetic. The majority prefer local anesthesia.

Wet dressing of Epsom salts is used to the wound. This dressing is covered with wax paper to keep it moist, and it is changed as often as it becomes soiled.

Pus is not always encountered in making this incision, because it has not yet formed. If the incisions are made promptly, the stage of suppuration may be prevented from developing.

Fluids should be given freely by rectum, subcutaneously, or intravenously.

In case the patient is critically ill, some advise the antistreptococcic serum and think this shortens the course and prevents complications.

I shall present the following case report in order to illustrate some of the essential points about this condition:

The patient, age 25, came to my office on March 26, 1931, complaining with a sore throat and pain when opening his mouth. The pain began two or three days before after a dentist had probed in a molar alveola pocket, which had been extracted a few weeks previously. The left tonsil was very painful to pressure, but no swelling was present. There was a firm swelling in the submaxillary region. I treated him about three or four months before for Vincent's angina, and he apparently made a complete recovery. He gave history of frequent attacks of tonsillitis.

The following day, March 27, 1931, I saw the patient again. His temperature was 102, pulse 130, and he appeared sick and suffering a great deal of pain in left side of his face. The swelling in the submaxillary region had increased and spread underneath the chin and was board like in hardness. There was a well defined border of this hard edema in the neck with redness. The tongue was swollen and the mucous membrane in the floor of the mouth was swollen and elevated to the upper margin of his gums.

I advised the patient that hospital treatment was necessary immediately, and he was sent to the Jefferson Hospital in Roanoke, Va.

The submaxillary and submental regions were incised and drained as described in the treatment above. He made an uneventful recovery, and was discharged from the hospital in fourteen days.

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## THREE SINS AGAINST CHILDREN—PURGATION, DEHYDRATION, STARVATION.*

T. D. WALKER, Jr., M. D., Newport News, Va.

One finds himself in the midst of conflicting opinions when he attempts to discuss purgatives, for after a man has practiced medicine for a few years he develops his own ideas about them, so possibly there can never be any equanimity of thought on the subject. I have no desire to discuss the various types of purgatives, cholegogues, hydrogogues, etc., their indications and contra-indications, but simply have in mind suggesting moderation in their use in treating children.

John Burroughs once said that we are "built up around a gut," and some seem to believe that all the maladies of childhood have their origin in the gut, and with the first indication of fever a drastic purgative is given. If the fever continues, drastic purgation is continued and a second and even a third purgative is given, the thought being that the continuation of fever is due to toxic absorption from the bowel and this toxic material must be removed. This conclusion is often reached without a

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Suffolk, Va., November, 1931.

thorough search being made for the cause of the illness, which, upon examination, may be found far removed from the gastro-intestinal tract and located in the throat, ears, kidneys, or skin. If the gastro-intestinal tract is at fault there will be evidences of the fact, such as vomiting, and watery, mucous, or bloody stools. Since vomiting occurs with almost every infection of childhood, the character of the stools is more informative than vomiting. If the stools remain practically normal in character, it is almost a certainty that the trouble is not in the bowel.

Gastro-intestinal tract infections which cause fever are more often secondary than primary. For instance, an infectious diarrhea is often secondary to an upper respiratory tract infection.

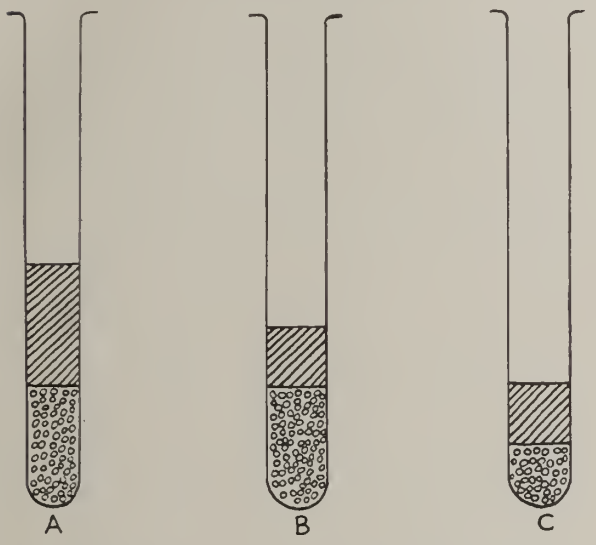
To what extent then should children be purged? In the beginning of a diarrhea a mild purgative should be given, but after the diarrhea has been well established a purgative should not be given. If the diarrhea is due to food, and a fermentation or putrifaction is present, changing the food will correct the condition and a purgative is not necessary. If fermentation is present with acid stools and chaffed buttocks, a protein milk, such as buttermilk, Finkelstein's milk, or skimmed milk with casec will correct the condition. If putrefaction is present with alkaline, foul smelling stools, reducing the proteins and increasing the carbohydrates will correct the condition. A fermentative diarrhea is by far the more frequent of the two. If the diarrhea is infectious with fever and blood and mucous in the stool, a purgative will increase the irritation. Nature tries to protect an irritated mucous membrane by pouring out an alkaline mucous, so drastic purgation does harm by removing the alkaline protection and increasing the irritation of an already inflamed surface. If the diarrhea is serous or watery, as in cholera infantum, a purgative is contra-indicated because it increases the watery stools and leads to rapid dehydration. In all other diseases of childhood, e. g., tonsillitis, otitis, pyelitis, exanthemata, etc., a mild purgative just sufficient to empty the intestinal tract of food which may ferment or putrefy is all that is necessary. Therefore, the harmful effects of purgation are irritation, dehydration, and prolongation of convalescence. We are admonished to practice moderation in all things, so I would advise moderation in the use of purgatives in treating children, and avoid the first sin against childhood.

Dehydration means—to deprive or to be freed of water or the elements of water. Water and life are synonymous terms as far as the human body is concerned. The blood plasma —that important carrier of nutritive material to every organ and tissue—contains over ninety per cent water. The brain which regulates and correlates so many intricate activities and processes contains from eighty to ninety per cent water. The liver cell which is associated with so many processes which are vital to the maintenance of normal metabolism contains seventy-five per cent water. The mighty muscle which is so importantly related to feats of strength is three-fourths water. The saliva which reduces starches to soluble sugars is almost pure water, ninety-nine and five-tenths per cent. Bone which has been shown by tests to possess a tensil strength of 25,000 pounds per square inch, which is one and one-fourth times as great as that of cast iron and more than twice that of good timber is forty per cent water. If a 150-pound man were put in an electrical oven and all the water driven off, the undertaker would have only 50 pounds to handle.

That physicians as long ago as the early part of the eighteenth century were impressed with the dietary importance of water is indicated by a pamphlet published in London and reprinted in Philadelphia in 1723. The pamphlet is by John Smith, C. M., and is entitled "Curiosities of Common Water," or "The Advantages Thereof in Preventing and Curing Many Distempers." Among the interesting excerpts from the volume are the following: "In the Country of Cornwall, the poorer sort, which never or but very seldom drank any drink but water, were strong of body and lived to a very great age." The author quotes a Dr. Manwearing as saying: "In the primitive ages of the world water drinkers were the longest livers by some hundred of years, not so often sick and complaining as we are." That men and lower animals will live longer without food than without water is well recognized. Philip B. Hack kept an adult dog living 100 days by giving it 23½ ounces of water daily. Rubner says that a fasting dog may lose all its glycogen and fat and one-half of its pro-

tein and still live, but if it loses one-tenth of its water it dies.

When for any reason the amount of water eliminated from the body becomes greater than the amount taken in, desiccation or drying out of the blood and tissues results. This may take place rapidly in vomiting, or in the severe diarrheas, such as cholora infantum, or more slowly in the prolonged diseases, such as infections diarrhea or typhoid fever.




A. Normal Blood—Serum and cells equal.
B. Dehydration—Cells remain normal—Serum decreased in volume.
C. Athrepsia—Blood volume decreased but proportion between serum and cells remains constant.

Symptoms of the drying out process are as follows: loss of weight which may be as much as a pound a day. This loss of weight is a loss of fluid and not a melting away of the tissues. The appearance changes, the features become sharpened, and the eyes are sunken and lose their lustre if the loss of fluid is rapid. The skin may take on a dusky color and remain in folds when pinched up. The lips and finger-tips may be very red due to a piling up of the red blood cells in the capillaries. The tongue is dry and the kidneys are inactive because of the blood concentration. Waste products are retained, e. g., acid sodium phosphate and the non-protein nitrogen group. If the water loss is extreme respirations are disturbed and breathing becomes deep and labored as the result of acidosia. The acidosia is due, in part, to the failure of the kidneys to eliminate acid sodium phosphate and in part to the acids produced in the tissues as the result of diminished oxidation due to deficient blood circulation. Leucocytosis is usually present either as a compensatory condition or due to the thickened state of the blood. Some degree of fever is usually present, and this is because water deprivation causes increased protein destruction. This combined with decreased blood volume and insufficient water for heat dissipation causes fever. Fever frequently subsides when sufficient water has been given. The mental condition is often disturbed and there is restlessness and wringing of the hands. This disturbance of the central nervous system may go on to convulsions and coma.

So excessive loss of water, whether it be from vomiting, acute diarrhea or a prolonged drying out, must be checked and the intake of fluids increased to maintain a postive water balance.

A. Piling up of cells in arteries, due to dehydration.—Blood count from artery and vein differs.
C. Piling up in capillaries causes red lips and finger-tips.

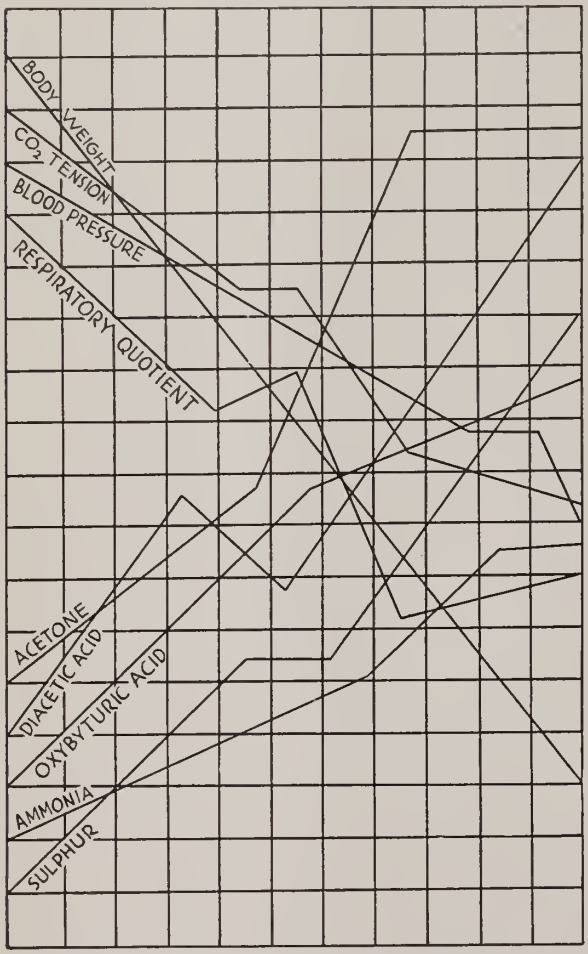
How much fluids should be given? A sick child should have 2 to 3 ounces per pound per day. It is not always practical to give that amount but it should be approached as near as possible. It may be given subcutaneously, intravenously, intraperitoneally, or by mouth. By mouth is preferable because the water passes directly through the liver and tends to wash it out. This is important in infections of the bowel, for in these conditions the liver is enlarged and liver function disturbed.

Fluids should be given until the water balance remains positive. This happens when kidney function returns, the sunken eyes seem to return to their sockets and the dark circles around the eyes disappear, the weight loss checked and normal elasticity of the skin returns, and the cherry red lips and finger-tips return to normal color. Therefore, if we give fluids patiently and persistently, if necessary having a nurse sit by and give it with a teaspoon until a positive water balance is maintained, we will save the lives of many children and will not be guilty of committing the second sin against childhood.

Starvation or hunger is the deprivation of a organism of any or all of the elements necessary for its nutrition. For proper nutrition carbohydrates, proteins, fats, inorganic salts, water, and vitamins are necessary. Starvation

may be partial when any of these elements are inadequate, or it may be complete when all of these elements are inadequate. The efficiency of human digestion during fever is not reduced more than 5 to 10 per cent, and the flow of digestive enzymes is only slightly interfered with, provided the organism as a whole is properly nourished.

If metabolic function is to be maintained near normal a definite amount of the various food elements must be given daily. For instance, about 15 grains of protein per pound per day




Starvation depresses body function. Harmful products accumulate.

are necessary to maintain a nitrogen balance. This amount is contained in one and one-half ounces of milk. Eighty grains, a little more than one teaspoon, of carbohydrates, and 20 grains, one-third teaspoon, of fat per pound per day are necessary. These foods should provide sufficient calories to prevent a loss of weight, for harmful consequences follow a continued loss of weight due to starvation. Blood pressure, alveolar $CO_2$, tension, and respiratory quotient are lowered, while the ketones, ammonia and other harmful products increase. The sick child cannot be fed as bountifully as the well child but we can avoid the prolonged giving of broths and gruels which contain only three calories per ounce. If a quart of such food is taken a day, only 96 calories will be given and the harmful effects of starvation will follow.

Therefore, we recognize the importance of an adequate diet for the sick, and are aware of the dangers which occur from an insufficient amount of food or nourishment. My suggestion is feed your sick children, try and maintain as near as possible the normal metabolic functions, and thereby avoid the third sin against childhood.

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# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka St., Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Ave, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 S. Market St., Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Ave., Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Ave., Richmond.

**State Auxiliary—Executive Board Meeting.**

On Saturday, March 11th, an Executive Board meeting of the Auxiliary to the Medical Society of Virginia was held in the Richmond Academy of Medicine Building. This meeting was attended by the State President, Mrs. Wm. Lett Harris, Mrs. M. N. King and Mrs. Southgate Leigh, from Norfolk, Mrs. T. Elmore Jones, from Portsmouth, Mrs. H. M. Snead and Mrs. Meade Edmunds, from Petersburg, and by ten other State officers who reside in Richmond. Plans for promoting the state work were discussed and methods for further organization were decided upon.

The Richmond women entertained the out-of-town members at lunch at the Gypsy Tavern. The social contact was most delightful and the work accomplished of much benefit to the organization.

**Local Auxiliaries.**

Auxiliary to Post-Graduate Medical Society

The Auxiliary to the Post-Graduate Medical Society met in Petersburg, Va., Friday, March the 3rd. at the Y. M. C. A. Mrs. H. M. Snead, president, presided.

Mrs. William Lett Harris, Norfolk, State President, was present and gave a talk on the work of the Auxiliary which was most interesting. The recent president, Mrs. J. Allison Hodges, Mrs. Stone and Mrs. Weitzel were guests from Richmond. Mrs. Joseph Bear was unable to attend on account of sickness, and arranged for Mrs. Hodges to talk on County Organization.

Ladies from adjoining counties were notified and special effort was made to create more interest in Auxiliary work.

Arrangements have been made for a rummage sale, April 1st, to raise funds for the Hospital.

Auxiliary to Richmond Academy of Medicine

Mrs. Stuart McGuire gave a talk on The Need of Play in Character Building at the regular monthly meeting of this Auxiliary in March.

At this meeting it was voted to have a card party in May for the purpose of raising money for the work of the Auxiliary.

Auxiliary to Norfolk County Medical Society

The Auxiliary of the Norfolk County Medical Society is sponsoring a weekly Health Talk over WTAR. The President, Mrs. Franklin D. Wilson, Norfolk, is president of this Auxiliary.

**Program for Annual Meeting of National Auxiliary.**

The Woman's Auxiliary to the American Medical Association is to hold its annual meeting in Milwaukee, Wis., June 12th-16th. A most attractive program has been arranged and all women attending the American Medical Association convention with their husbands, whether or not Auxiliary members, are invited to participate in the entire program given below.

Woman's Auxiliary
to the
American Medical Association
Eleventh Annual Meeting
Milwaukee—June 12-16, 1933
Headquarters: Hotel Pfister, Milwaukee, Wisconsin

Preliminary Program

*Monday, June 12, 1933*

12:30 P. M.—Luncheon at College Woman's Club, in honor of Past Presidents, followed by National Board Meeting and visit to American Medical Association Exhibits at Auditorium. Tickets, $1.00.

7:00 P. M.—Dinner for National Board, delegates and wives of officers and delegates of the American Medical Association, at Woman's Club of Wisconsin
Musical Program furnished by artist members of Auxiliary to Medical Society of Milwaukee County. Tickets $1.25.

*Tuesday, June 13, 1933*

9:00 A. M.—General Meeting, Roof Room, Hotel Pfister. Mrs. James F. Percy, *presiding.*

12:30 P. M.—Luncheon and Bridge, at the Wisconsin Club. Tickets $1.25.

2:00 P. M.—*Attractions available for those not wishing to play bridge, are Layton Art Gallery, Milwaukee Art Institute, Milwaukee Museum, Curative Work Shop and Vocational School, or
*Bus Trip to County Institutions, Milwaukee Children's Hospital Convalescent Home, and Washington Park Zoo.

8:00 P. M.—General Meeting of American Medical Association.

10:00 P. M.—Informal Dance, at Wisconsin Club. Courtesy of State Medical Society of Wisconsin. Hostesses: Woman's Auxiliary to the State Medical Society of Wisconsin.

*Wednesday, June 14, 1933*

9:00 A. M.—General Meeting, Roof Room, Hotel Pfister. Mrs. James F. Percy, *presiding.*

12:30 P. M.—Auxiliary Luncheon, Fern Room, Hotel Pfister. Toastmistress, _____. Guests and speakers from the American Medical Association. Musical program. Tickets $1.00.

4:00 P. M.—*Teas in private residences.

8:30 P. M.—Light Opera _____. Tickets, $1 00.

*Thursday, June 15, 1933*

9:00 A. M.—General Meeting. Roof Room, Hotel Pfister. Mrs. James Blake, *presiding.*

12:00 Noon—Trip to Oconomowoc Lake District. Luncheon 12:30 P. M., Carnation Milk Plant, Oconomowoc, Wisconsin, Transportation and Luncheon courtesy of Carnation Milk Company, or

12:30 P. M.—Buffet Luncheon. Crystal Room, Hotel Pfister. Tickets 75c.

2:00 P. M.—*Sight-seeing Tour of Milwaukee.

6:30 P. M.—"Bring Your Husband" Dinner. Fern Room, Hotel Pfister. International-House-Cabaret. Tickets $1.50.

9:00 P. M.—President's Reception and Ball. Schroeder Hotel. Hosts: The American Medical Association.

*Friday, June 16, 1933*

10:00 A. M.—Golf Tournament.
All trips start from Hotel Pfister.

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*Bus transportation to be paid by individuals.

Mrs. Rock Sleyster, *General Chairman,*
Wauwatosa, Wisconsin.

# Comments on Advertisers.

**False Rumors Concerning Viosterol Denied by Dr. Steenbock.**

Mead Johnson & Company states that ever since viosterol was offered to the medical profession, about four years ago, it has been attacked by various persons. Some of these attacks no doubt were sincerely motivated, but others were seized upon and exaggerated by interests who had no viosterol to sell.

Recently a new form of anti-viosterol propaganda has been reported by physicians all over the country. It is circulated by word of mouth—never in writing—and the apparent purpose is to influence physicians to prescribe vitamin D agencies other than viosterol.

Physicians are being told, for example, that Dr. Harry Steenbock has "condemned" viosterol, that the Wisconsin Alumni Research Foundation "would withdraw viosterol from the market in ninety days," etc., etc.

In answer to these malicious untruths, Dr. Harry Steenbock makes the following statement:

"Viosterol in its various forms has to date been found fully as valuable in medical practice as was anticipated at the time that it was first introduced to the American markets. Up to the present time there have been no reports of any untoward effects from its administration, although originally it was anticipated from the results of animal experiments that some cases of intoxication might result from its use in human medicine. . . . I see no necessity for reversing my original opinion as to its outstanding merits in any way whatsoever. Any statement to the contrary can be definitely labeled as false." (Signed) H. Steenbock.

Physicians can draw their own conclusions in regard to this valuable therapeutic agent that has endured four years of the most searching experimental investigation and clinical use not only in rickets but also for controlling calcium-phosphorus metabolism generally.

**Cocomalt Valuable in Malnutrition.**

An alarming result of the economic depression through which we are passing is the tremendous increase in mal-nutrition among school children. A recent survey of 130,000 school children in sixteen states showed that 21 per cent were underweight by 10 per cent or more.

One way in which school and medical authorities are meeting this grave problem—combating this ever-increasing menace—is by serving Cocomalt (R. B. Davis Company) in milk to the youngsters at lunch time. Every glass is equal in food-energy nourishment to almost two glasses of milk alone; and as a result the children very quickly show signs of mental and physical improvement. Wherever possible, parents have been asked to cooperate by serving Cocomalt in milk at home. Children love this delicious chocolate flavor food-drink and drink far more of it than they would of milk alone. Very gratifying gains in weight and energy have been reported.

Cocomalt contains a rich supply of Sunshine Vitamin D and is accepted by the American Medical Association Committee on Foods.

# Book Announcements

**Diseases of the Heart.** Described for Practitioners and Students. By SIR THOMAS LEWIS, C. B. E., F. R. S., M. D., D. Sc., LL. D., F. R. C. P., Hon. D. Sc. (Michigan). Physician in Charge of Department of Clinical Research, University College Hospital, London; Physician of the Staff of the Medical Research Council, etc. New York. The Macmillan Company. 1933. Octavo of 297-xx pages. Cloth. Price, $3.50.

The author of this very interesting, practical and important volume states that he desires to furnish in concise and workable form that data which are useful and important in the clinical diagnosis and treatment of heart disease. He uses as his guide in constructing the various sections, that which he has observed and proven to be true by personal confirmation and evaluation.

It is interesting to note that the first chapter deals with Cardiac Failure; however, this is most appropriate, for it is this departure from physiology which brings the patient to the physician for advice.

Every aspect of Heart Disease is covered, including a most valuable discussion of the heart in Child-bearing, Anesthetics, and Operations.

One is impressed with the details given in the discussion on Treatment.

The last chapter, a general summary of diagnosis, prognosis and local treatment is a particularly important contribution.

If the book consisted only of the chapters dealing with Heart Failure, Heart Strain, Work and Failure, and the last chapter, noted above, it would still be one of the most valuable books written on heart disease in the past 25 years.

The volume should find a place on the desk of every practitioner of medicine and teachers would do well to recommend it unconditionally to their classes as a sane guide to clinical cardiology.

William B. Porter, M. D.

**Further Studies on the Pharmacology of Certain Phenol Esters with Special Reference to the Relation of Chemical Constitution and Physiologic Action: The Histopathology of Some Neurotoxic Phenol Esters.** National Institute of Health, Bulletin No. 160. U. S. Treasury Department. Public Health Service, Washington. 1932. United States Government Printing Office. Paper. 69 pages. For sale by the Superintendent of Documents, Washington, D. C. Price, 10 cents.

# Virginia Medical Monthly

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# Editorial

**To the Members of the Medical Society of Virginia.**

Probably at no time in the history of medical organization in this country have national, state, and local medical societies been more important than now. The influence of medical societies in the past has found expression, in great measure, in the splendid record of achievements in ethical and scientific medicine. Much of the great medical service rendered the country during the past third of a century has been grounded upon the strength of ethical medical values, as have found expression in organized medicine. The genius of the medical profession has spoken and acted for the protection of medical practice and against the charlatan and the quack. It has ever striven to advance its art and scientific achievement in the interest of the public welfare. This has been evidenced by the efforts of the national societies in the interests of medical education, in the fight for ethical advertising and publications, in the opposition and exposure of medical frauds and patent medicines, in the strong effort to promote the public welfare in all national legislation for public health and in governmental services of the nation, in peace and war. The national society, with its membership throughout the nation, has not only done a remarkable work for the science of medicine and for the public interests, but also for protection and support of professional, scientific, and economical welfare of the individual doctor.

The same may be said, in lesser degree, of the value and worth of state and local medical organizations. These state and local societies have performed invaluable service for the public interests and for the individual interests of practitioners of medicine.

There can be no argument on this point. No doubt something may be said by critics. Some may affirm that they find objectionable features in such organizations, that politics, favoritism and like faults have been shown in such organizations. These and like objections can never, however, overbalance the larger values of the system of organized medicine in America which has done so much for the public and the profession alike.

This comment is made to urge every member of the Medical Society of Virginia to rally to the cause of medical organization. This can only be done by throwing enthusiastic support to local, state and national organizations. Members are urged to inform themselves upon the economical and professional needs of the times and to attend meetings where action is to be taken that may influence the trend of medical practice and scientific advancement in medicine. Members are urged to place these features of medical organization in the forefront of their thoughts during the coming months and be prepared to take action in support of those principles that seem to offer protection and advancement of medical practice in this country.

In these times of economic and political dis-

tress, it will be especially difficult for members to meet the demands of dues and expenses connected with the maintenance of active membership in these several national, state and local medical societies but, let it be impressed, that there never was a time, probably, when such funds were more urgently needed and likewise more wisely expended in this cause.

A strong, united, vocal, national, state and local medical profession can solve the present-day ethical, economical, professional and scientific problems—of this, its past achievements assure.

**Arterial Thrombosis in Middle Life.**

Comment here upon the subject of arterial thrombosis in middle life necessarily must be general in nature. No survey of this subject has been made as applied to the arterial distributions in the several extremities and in the viscera, but it is a common clinical experience to observe arterial thrombosis and infarction in the heart and in the brain, or in the background of arteriosclerosis of the extremities. A recent discussion by Conner* brings out many salient and suggestive considerations related to arterial thrombosis in viscera. This article deserves a perusal by general practitioners. Conner approaches the matter by a presentation of the facts of today as accepted clinically in coronary thrombosis. Coronary disease has received nation-wide discussion within recent years. Now, as never before, even greater than in many diseases, more apparent to the eye, coronary disease is recognized and understood. Probably the average medical practitioner of today, suggests Conner, is more familiar with the coronary thrombosis than eminent clinicians of two decades ago. The wide publicity given coronary thrombosis in medical journals and medical societies within the past ten years has brought clearly to medical minds of today that clinical syndrome. Now, as Conner suggests, may it not be true that in the distribution of the arterial system of other organs and viscera like phenomena are occurring without recognition?

Coronary artery disease appears to be common in early middle life. In a group of 287 cases, diagnosed as being thrombosis of the coronary artery, Conner notes that in 75 per cent, the symptoms appeared before the age of 61 years, and in 33 per cent before the age of 51 years. Arterial thrombosis naturally ties itself up with arteriosclerosis but it is to be remembered that coronary thrombosis occurs, not infrequently, without arterial hypertension. Conner cites a group of 500 cases of angina pectoris, reported by White and Bland, in which only 36 per cent showed arterial hypertension. This observation points to the situation that, while arterial thrombosis of the coronary artery frequently occurs in general arteriosclerosis with hypertension, it occurs also without evidence of this condition. In connection with this, one might ask whether other factors besides arteriosclerosis enter into the cause of thrombosis. There are reasons for thinking that other factors may produce thrombosis but the evidence is not conclusive. It is suggestion and probable that conditions of the blood itself may favor thrombosis without hypertension. In the kidney arterial thrombosis as a result or embolic infarction occurs. But the symptoms are so indefinite that the condition is rarely recognized. Postmortem examinations disclose evidence of old infarcts in arteriosclerotic kidneys. But would it not more likely be recognized were the possibility of its occurrence kept in mind? In persons with general signs of arteriosclerosis overtaken with sudden pain in the kidney region, with more or less fever, leucocytosis and presentation of blood cells and albumen in the urine, one may strongly suspect arterial thrombosis there. In the spleen, Conner points out, postmortem evidence of old healed infarcts is found, disclosing signs of previous arterial thrombosis. Pain over this area, fever, leucocytosis, tenderness and possibly muscular spasm over the splenic region, strongly directs attention to arterial thrombosis in the spleen. Should friction sounds be elicited over this area, added evidence is obtained.

In the pancreas, points out Conner, arterial thrombosis is rarely known and clinically, signs of such arterial accident are entirely wanting. It is thought not improbable that such infarction does occur and is evidenced by the sudden occurrence of glycosuria, pain in the epigastrium and umbilical region, with tenderness there and accompanied by shock, fever and leucocytosis and nausea and vomiting.

In the mesentery, infarction is recognized and is not rare. Often diagnosis is finally made at operation and postmortem. Clinical diagnosis of this condition is rare.

*Conner, Lewis A., The American Journal of The Medical Sciences, January, 1933.

Thrombosis of the vast arterial field is thoroughly established, as pointed out by Conner, especially of the small arterial branch. The wide distribution and variableness of the intestines makes the recognition of symptoms and diagnosis more or less difficult. It is recognized that infarction more frequently occurs in that area of the gut, says Conner, that is supplied by the superior mesenteric artery rather than that supplied by the inferior.

As to symptoms, the clinical evidence appears in two stages—first, symptoms of irritation of the gut, and, second, symptoms of intestinal paralysis. At first, cramp and pain, nausea, vomiting and diarrhea, prostration, collapse and toxemia occur. In a day or two pain ceases and the signs of paralytic ileus appear: obstipation, great distention, persistent vomiting, pain on pressure, fever, and leucocytosis occur.

Arterial and venous distribution of the intestines and liver make for confusion. Mesenteric venous thrombosis, arterial embolism and arterial thrombosis in the abdominal cavity make for confusion in differentiation and diagnosis. The publication of case reports and citation of instances of postmortem findings, as illustrative of these possible vascular accidents brings the subject forward in clinical experience and more frequent recognition.

**High Intestinal Obstruction.**

General practitioners may well listen-in on the discussion of surgeons and physiologists on the subjects of the cause of death in high intestinal obstruction. If a casual inquiry is made as to where such discussion is to be found, one sees articles largely in special journals, dealing in surgery, in journals of research and experimental work and in journals of physiology and biological chemistry and experimental medicine. It is probable that important findings are being made and that facts are being brought to light on this subject, although there is still a want of agreement.

In these columns it is merely our purpose to give suggestive comment on this matter. Often in the course of medical practice, to the family physician, comes first the patient exhibiting common but emphatic symptoms such as are excited by an upheaval of the alimentary tract in an acute obstruction of its upper segments. It becomes the duty of the doctor called into the home where the patient exhibits early symptoms of this condition, as shown in pain, nausea, vomiting, signs of exhaustion, to evaluate the situation and to read into the occasion a true meaning. Hence, it is particularly important to the family doctor to inform himself on this, as all disturbances of the digestive tract. It is in this system that much of acute pathology, more or less, demanding immediate surgical treatment, dramatically arises.

Employing an article by Herrin and Meek* as one for comment, we note the purpose of certain experiments conducted by them was to investigate the cause of symptoms and fatal course, following a known distention of the intestines, when uncomplicated by strangulation, rupture, necrosis, or peritonitis. They found that constant distention of loops with a pressure from 50 to 80 m.m. of mercury, resulted in malaise, loss of appetite, excessive secretion from the loops, desiccation and dechlorination of tissues, decreased blood and plasma volumes, increased hemoglobin content, moderated by increased alkali reserve, high non-protein nitrogen, and greatly decreased blood chloride. Death occurred on about the eighth day and it was thought it was not due to toxemia from bacterial products or necrotic substances. Death, it was thought, was due primarily to loss of chloride—chloride which was poured out by the loop under stimulation of the mechanical pressure. While this was accompanied by decreased blood and plasma volumes, the loss of chloride seemed more important and primary as the animals were kept alive by introducing small quantities of 10 per cent salt solution into the intestines.

Dechlorination seemed to be the essential change following distention of the loop of the bowel.

Production of symptoms and blood changes similar to acute intestinal obstruction was produced experimentally on a group of dogs. Fifteen dogs were employed. Twenty-five experiments were made on this lot; employing Thiry and Thiry-Vella fistulas, thus looping a segment of bowel between artificial openings in the abdominal wall. This section or loop was subjected to inflation. As distention was continued, the dogs showed loss of weight, loss of gloss of hair and skin became dry, muzzle became dry and warm, eyes became shrunken and pulse rapid; fibrillary tremors and weakness of legs followed; temperature decreased and leukopenia was found. No pain occurred

*Herrin-Meek—Archives of Internal Medicine, Volume 51, No. I.

but gradual advance into coma was observed. Death followed. Fourteen of the dogs were allowed to run a fatal course—the average being eight days.

With such a set-up in experimental study, practitioners may see possibilities for an interesting series of observations on the subject of distention and obstruction of segments of the small intestines, high up in the tract. Herrin and Meek, in the study, being unable to find evidence supporting theories of toxemia as a cause of symptoms and death in distention and obstruction, turned their efforts to non-toxic factors as a cause.

The first permanent symptom which interests these workers was evidence of a marked increase in the fluid flowing into and from the loop. This was taken to be a true secretion as it contained ferments common to those in succus entericus. This fluid was rich in chloride and in excessive daily amounts. The appetite failed, malaise and anorexia followed; although the animals took water, both plasma and total blood volume showed decrease. Plasma chloride fell daily.

While the authors found that dechlorination occurred, they felt that demineralization really took place and this should not be overlooked. A loss of water and salt takes on extreme importance.

The authors were not in a position to make comparisons between experimental findings and clinical conditions but it would seem that important significance may be attached to the work herein mentioned. Readers interested in carrying on a course of reading related to this subject may find the references attached to the Herrin-Meek article of direct help. Publications of Cooper, Ochsner, Hartwell and Houget, White, Bridge, Armour and co-workers, Elman and Hartman, Dragstedt, and others, would afford interested readers material for study of the subject.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Meeting of the Department.**

The annual organization meeting of the Department of Clinical Education on February 20th, at which all seven members (the chairman, Dr. R. D. Bates, and Drs. H. S. Daniel and Ray Moore representing the Medical Society of Virginia, Drs. Manfred Call and L. T. Royster representing the medical colleges, Dr. W. F. Draper representing the State Department of Health, and the Executive Secretary) and several visitors were present, was devoted primarily to discussion of proposals for postgraduate clinics and courses in pediatrics submitted by Drs. F. D. Wilson, of Norfolk, and W. P. Jackson, of Roanoke, chairmen of the child welfare committees of the Pediatric Society of Virginia and of the Medical Society of Virginia, respectively.

Drs. Wilson and Jackson reported the action of a joint meeting of their committees that morning in which it was recommended to the Department that, because pediatrics was the pronounced preference of members of the classes in prenatal and postnatal care as the subject for future courses, a similar experiment in pediatrics should be undertaken with instructors from within the state until a full-time clinician could be secured. Nineteen members of the Pediatric Society had volunteered to give three days of teaching service, at points distant from their practice, without expense except for travel, if the Department wished to use them as instructors and would organize the classes. In addition to these experimental courses, the two child welfare committees recommended all-day clinics, organized locally and without expense, for the benefit of all practitioners but for especial emphasis upon pediatrics because it is a neglected subject. Such clinics were said to be possible in cities of any size, and wherever a pediatrist was located he could be relied upon to help furnish material.

Although the general idea of instruction in pediatrics was approved, it was agreed by members of the Department after thorough discussion that the net cost of $150 to the Department could not be assumed inasmuch as it was operating on a sharply reduced budget for the year and now had a balance of only $57.38. Also, it was feared that an experimental and poorly financed program would operate to the disadvantage of later courses under a full-time instructor. Stimulation of lo-

cal pediatric clinics, however, was accepted as a desirable activity. The resolution in which the Department crystallized its discussion and which was unanimously passed is worded as follows: "That the Department of Clinical Education expresses its grateful appreciation to the Pediatric Society of Virginia for its interest in the program of post-graduate education and for its offer of voluntary teaching services by its members. The Department goes on record as favoring the provision of a definite pediatric program to be conducted under the auspices of the local medical societies, and recommends that one all-day pediatric clinic be held each year by such societies, if possible."

**Post-Graduate Clinic at University of Virginia.**

The eleventh in the regular series of semi-annual post-graduate clinics at the University of Virginia Hospital will be held on Thursday and Friday, May 4th and 5th. The program consists of papers on digitalis therapy, surgical treatment of tuberculosis, respiratory affections, vitamins and a symposium on malignant tumors to which six members of the staff will contribute.

The usual cordial invitation is extended to the profession in Virginia, not only the threescore who have been rather faithful in attendance during the life of these clinics but all others whose attendance may be necessarily somewhat intermittent.

**Bedford Class in Prenatal and Postnatal Care.**

Through the influence of Dr. Thomas P. West, President of the Bedford County Medical Society, one of Dr. Lapham's classes, an intensive course of two weeks, has been assigned to begin in Bedford on April 10th.

Dr. West secured within a day or two the enrollment of eight county physicians for the course, and it is anticipated that the class when finally organized will include nearly all, if not quite every one, of the Bedford physicians.

**Classes in Prenatal and Postnatal Care in the Southwest During the Summer.**

The program of prenatal and postnatal instruction begins its second fiscal year on May 1st, when Dr. Lapham will go to the Southwestern end of the state for a stay that may extend until fall.

The circuit tentatively planned for Danville and vicinity for the spring months has been postponed until later in the year because plans of organization were less well developed in the centers, except Danville, than in the several counties composing the Clinch Valley Medical Society.

The first summer circuit in the Southwest consists of proposed centers in Fremont, Norton, Big Stone Gap, Pennington Gap and Gate City. The second consists of centers in Tazewell, Lebanon, Bristol, Abingdon and Marion.

A representative of the Joint Committee was to appear on the program of the Wise County Medical Society on March 22nd to give the latest information in regard to the proposed courses. Special call meetings of the Tazewell, Scott and Lee County societies were being arranged, and it was expected that on the same trip still other societies could be visited with a view to organizing classes wherever they are desired and the minimum membership of ten is obtained.

**Steady Progress in Tidewater Classes.**

The number of visitors to the classes in Norfolk and vicinity has shown considerable increase since the report of last month, bringing the total number of visitors to twenty-one. The visitors are as follows: Franklin—Drs. E. A. DeBordenave, L. M. Futrell, B. A. Pope and Joel Crawford. Portsmouth—Dr. Urban. Norfolk—Drs. M. W. Healy, N. A. Nicholson, E. M. Mann, S. M. Mann and J. L. Chapman. Norfolk (Colored Class)—Dr. J. T. Givens.

The enrollment of seventy-three in the Tidewater classes makes more significant the rate of attendance, through the first five meetings, of 76.7 per cent, exactly the same percentage for all of the twenty-one classes conducted up to this time.

**Opinions of Members of the Classes.**

All members of Dr. Lapham's classes have been requested to submit, anonymously and with postage prepaid, a frank opinion of the work. The very encouraging score in this tabulation to date, is as follows: 131 of 136 replies said the lectures were excellent or good; 63 of 121 replies said the clinics were excellent or good; 123 of 128 replies said the course was worth the cost in time and money; and 122 of 127 replies said they would be interested in courses in other branches conducted on the same plan.

George W. Eutsler,
*Executive Secretary, Department of Clinical Education, and Secretary, Joint Committee on Prenatal and Postnatal Instruction.*

# Proceedings of Societies

**The Post-Graduate Medical Society of Southern Virginia**

Held a very instructive meeting in Victoria on the afternoon of February 28th. In the absence of the president, the meeting was presided over by Dr. E. L. Kendig, the vice-president. The attendance was good and following the meeting there was an informal subscription dinner at the Patrick Henry Hotel.

A moving picture film, "Traumatic Surgery of the Extremities," presented through courtesy of Davis and Geck, proved to be very instructive. This was followed by a paper on "Blastomycosis" by Dr. W. A. Barker, formerly of the University of Virginia and now associated with Dr. Wright Clarkson at Petersburg. Dr. Barker demonstrated an active case of this disease which was found in a rather advanced stage and, due to the prevalence of Blastomycosis in Southside Virginia during recent years, this paper and case demonstration proved to be of unusual interest.

Dr. T. G. Hardy, of Farmville, gave a paper on "A Simpler Method of Reduction of Dislocated Shoulder," many features of which appeared to be entirely new to the audience and the subject was discussed by practically every physician present.

Dr. W. Wilkinson, of La Crosse, presented a paper on "The Diagnosis of the Acute Intra-Abdominal Conditions," giving in a concise and forceful manner actual case histories of very unusual abdominal conditions, which proved instructive.

Dr. E. L. Kendig, of Victoria, presented a very excellent paper on "Problems of the Acute Female Pelvis" and also following this paper started a discussion on the recent reports of the national committee on "The Cost of Medical Care." Following a very lengthy discussion, this subject was referred to the committee on Legislation and Public Health, headed by Dr. J. Bolling Jones, of Petersburg, with the request that they report their views on this subject to the Society at some future meeting.

The final paper on the program was given by Dr. W. W. Rixey, of Richmond, on the "Treatment of Hemorrhoids and Rectal Prolapse." The physicians present were quite appreciative of Dr. Rixey's trip down to Victoria to make this presentation and they enjoyed his paper.

**The Accomack Medical Society,**

At its regular meeting on February 22nd, at the Drummondtown Tavern, elected the following officers for the ensuing year: President, Dr. Ira Hurst, Parksley; vice-president, Dr. A. F. Wood, Parksley; and secretary-treasurer, Dr. John W. Robertson (re-elected), Onancock.

Dr. D. L. Lekites, Chincoteague, read a paper on Coronary Thrombosis and Dr. A. F. Wood, Parksley, one on Acute Mania. Dr. J. L. DeCormis, Accomack, discussed a case of unusual and irregular fever in a baby nine months old, in which the temperature ranged from 106 to 96° F., and Dr. W. W. Kerns, Bloxom, reported an interesting case of stab wound of the heart. There was an informal discussion of the papers by all present. Although the attendance was small, the meeting was a very interesting one.

This meeting was unavoidably held over from December on account of a joint meeting having been held with the Northampton County Medical Society, which was called for the purpose of discussing State laboratory matters.

**Roanoke Academy of Medicine.**

The fifth meeting of the Academy for 1932-33 was held at the Lewis-Gale Hospital on Monday evening, February 6th. The meeting was turned over to Dr. W. R. Whitman, chairman, who presented the following program by members of the hospital staff.

Injuries of the Hand—Dr. Fred Davis.
Case Reports—Dr. C. D. Nofsinger.
Splenomyelogenous Leukemia: With Case Report—Dr. J. T. McKinney.
Treatment of Eclampsia—Drs. A. C. Davis and Paul Davis.
Case Report—Dr. M. A. Johnson.

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A dinner meeting was held on February 20th, at which time there were two out-of-state speakers.

Dr. M. C. Pincoffs, of the University of Maryland, Department of Medicine, spoke on "The Clinical Importance of Abrupt Elevations in Blood Pressure," and Dr. Arthur M. Shipley, of the University of Maryland, De-

partment of Medicine, gave an address on "Suppurations Within the Thorax." Both of these addresses were illustrated with lantern slides.

Alumni of the University of Maryland and affiliated schools were seated at the speaker's table.

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The seventh meeting of the Academy was held on March 6th with Scientific Program as follows:

Renal Function Tests—Dr. E P. Alyea, Division of Urology, Duke University, Durham, N. C.

An Evaluation of the End Results of the Medical and Surgical Treatment of Peptic Ulcer—Dr. Bruce Morton, Department of Surgery, University of Virginia.

Dr. Dewey L. Anderson, of Catawba Sanatorium, was elected to membership.

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The next meeting of the Academy will be held at the Roanoke Hospital on April 3rd.

**The Southside Virginia Medical Association**

Held its regular quarterly meeting at the Central State Hospital, Petersburg, Va., on March 14th. There were about sixty doctors in attendance and an attractive program was presented. All papers were freely discussed. After the meeting, the visitors were served a delightful buffet dinner by Dr. H. C. Henry and his staff.

The next meeting will be held on Tuesday, June the 12th, at which time there will be a symposium on pyelitis.

Dr. D. C. Mayes, Church Road, is president, and Dr. R. L. Raiford, Franklin, secretary-treasurer.

**Officers of Local Societies.**

In addition to the list published in our March issue, the following are new officers for local societies of which no other report has been made:

ALLEGHANY-BATH COUNTY

*President*—Dr. G. S. Hartley, Clifton Forge.
*Secretary*—Dr. R. P. Hawkins, Jr., Clifton Forge.

WARWICK COUNTY

*President*—Dr. J. Warren Sayre, Newport News.
*Secretary*—Dr. E. D. Blechman, Newport News.

# News Notes

**Medical Society of Virginia—1933 Meeting.**

The Council of the Society met on March 17th and at this time voted unanimously to accept the invitation from the Lynchburg Academy of Medicine, Inc., to hold its 1933 session in Lynchburg. The dates, selected subject to approval by the local organization, will be announced in the next issue of the MONTHLY.

With a view to facilitating the work of the House of Delegates and allowing more time for the delegates to attend the scientific sessions, it was voted to have the reports of the various committees published in the issue of the VIRGINIA MEDICAL MONTHLY appearing just prior to our annual meeting, that the delegates may have time to acquaint themselves with the work which has been accomplished and be prepared to discuss the reports when presented. It is believed that each report will receive a great deal more attention in this way and yet a great deal of time will be saved.

Other matters discussed were of a more or less routine nature. It is of especial interest to note that there was a hundred per cent attendance of councilors at this meeting, which is a rather unusual attendance record.

**Books Available to Members of the Medical Society of Virginia.**

As previously stated in these columns, all books in the Library of the Medical College of Virginia are available to members of the Society and may be borrowed at any time. The only cost is return postage. Below is given a list of some of the newer additions:

*Aldrich, C. A.*—Cultivating the Child's Appetite.
*Appleton, J. L. T.*—Laboratory Guide in Bacteriology.
*Bensley*—Anatomy of the Rabbit.
*Brues, Chas. T.*—Classification of Insects.
*Castle, W. E.*—Genetics and Eugenics.
*Causey, David*—Uninvited Guests.
*Chase, Stuart*—Men and Machines.
*Coulter, J. S.*—Physical Therapy.
*Creed*—Reflex Activity of the Spinal Cord.
*Crowe, H. W.*—Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases.
*Daniel, Rob. P.*—A Psychological Study of Delinquent and Non-Delinquent Negro Boys.
*Denny-Brown*—Reflex Activity of the Spinal Cord.
*Durken, Bernhard*—Experimental Analysis of Development.
*Emerson, Haven*—Alcohol and Man.
*Gee, Wilson*—Research Barriers in the South.
*Gesell, Arnold*—Infancy and Human Growth.
*Gesell, Arnold*—The Mental Growth of the Pre-School Child.
*Ginn, J. A.*—Pharmacology and Therapeutics.
*Greenwood, Major*—Epidemiology, Historical and Experimental.
*Greisheimer, Esther M.*—The New Physiology and Anatomy.

*Haldane, J. B. S.*—The Causes of Evolution.
*Hamilton, G. V.*—A Research in Marriage.
*Harris, Henry*—California's Medical Story.
*Herrick*—The Thinking Machine.
*Herskovits, M. J.*—The Anthropometry of the American Negro.
*Hewlett, A. W.*—Pathological Physiology of Internal Diseases.
*Hogben, Lancelot*—General Principles in Medicine and Social Science.
*Holl*—Sexual Life in the Child.
*Horgan, Edmund*—Reconstruction of the Biliary Tract.
*Jackson and Salisbury*—Outwitting our Nerves.
*Jaeger, Edmund*—A Dictionary of Greek and Latin Combining Forms.
*Johannsen, Oskar*—Medical Entomology.
*Kruif, Paul de*—Man Against Death.
*Landman, J. H.*—Human Sterilization.
*League of Nations*—League of Nations Yearbook.
*Major, R. H.*—Classic Descriptions of Disease.
*Mazer and Goldstein*—Clinical Endocrinology of the Female.
*McDougal, J. B.*—The Rabbit in Health and Disease.
*Newsholme*—International Studies on the Relation Between the Private and Official Practice of Medicine.
*Newsholme*—Medicine and the State.
*Newsholme*—The Story of Modern Preventive Medicine.
*Park, Wm. H.*—Public Health and Hygiene.
*Patterson*—American Educational Directory.
*Pitkin, W. B.*—A Short Introduction to the History of Human Stupidity.
*Power, Sir D'Arcy*—History of Pediatrics.
*Reed, Louis S.*—The Healing Cults.
*Renshaw, Arnold*—Laboratory Service and the General Practitioner.
*Riley, Wm. A.*—Medical Entomology.
*Sanger, Marg.*—The Practice of Contraception.
*Sherman, H. C.*—Chemistry of Food and Nutrition.
*Sigerist, Henry*—Man and Medicine.
*Still, Geo. F.*—History of Pediatrics.
*Thompson, C. J. S.*—Poison and Poisoners.
*Twitmyer and Nathanson*—Correction of Defective Speech.

## Richmond Meeting, Southern Medical Association.

Dr. Fred M. Hodges, Richmond, has been appointed General Chairman for the Southern Medical Association meeting to be held in Richmond in November, the appointment having been recently announced by the President of the Richmond Academy of Medicine, Dr. Carrington Williams.

## The American College of Physicians.

At its meeting in Montreal, Canada, in February, selected Chicago for its 1934 place of meeting, the exact dates to be named later. Dr. Geo. Morris Piersol, of Philadelphia, succeeded to the presidency and Dr. Jonathan C. Meakins, Montreal, was made president-elect. Dr. William Gerry Morgan, Washington, D. C., is secretary-general, and Mr. E. R. Loveland, Philadelphia, executive secretary.

Due to more stringest regulations governing the admission of physicians to fellowship in the College and the requirement that new members enter first as associates, the number of elections this year was very greatly reduced. The following Virginia physicians were elected to Associateship: Dr. Edward Lee Alexander, Newport News; Dr. Douglas Gordon Chapman, Richmond; Dr. William White Falkener, Newport News; Dr. Harold Walter Potter, Newport News; Dr. Landon Elwood Stubbs, Newport News. The total number elected to associateship was 112 while the total number elected to fellowship was only 24.

In view of the interest at this time in the report of the Committee on the Cost of Medical Care, we give herewith the report approved by the Board of Regents of the College at this meeting:

REPORT OF COMMITTEE ON PUBLIC RELATIONS
(*Approved by the Board of Regents, American College of Physicians, February 7, 1933*)

The final report of the Committee on the Costs of Medical Care is entitled: "Medical Care for the American People"

It is the twenty-eighth publication of a series representing an extensive and intensive effort to collect the factual data concerning numerous problems involved. These studies were made over a period of five years, after the expenditure of an extraordinary amount of thought, effort, and money.

The facts presented are of immense importance to the country as a whole and the medical profession in particular. They deserve the most careful study and consideration.

The detailed information is contained in the twenty-seven interim reports previously published, and only a brief summary is included in the final report. The main emphasis of the final report is placed upon certain definite recommendations proposed by the committee as the basis for a plan of reorganization of medical practice, so as to meet the social and economic defects of the existing system brought out by the factual data.

These recommendations are in the form of separate majority and minority reports, with a few members of the committee declining to assent to either report.

The widespread discussion which has followed the publication of the final report is centered upon the recommendations suggested. This is most unfortunate, as it has overshadowed the great value and significance of the studies upon which these recommendations are presumably based.

It is the opinion of your committee that the publication of definite recommendations was premature and unjustified by the facts presented. A careful analysis of the text of the reports shows that the recommendations are really only tentative suggestions for future consideration and careful experimentation, and in our opinion should have been offered as such.

It is also our belief that the actual factual data contained in the various reports are of such value that they deserve most careful study on the part of the medical profession. These facts reveal a situation which calls for consideration and action leading to modification of existing medical practice,

and in any such modification the medical profession should take a leading part.

It would be very unfortunate if prejudice caused by differences of opinion concerning the recommendations should belittle the value of the facts themselves. It would be still more unfortunate if either prejudice or inaction should deprive the medical profession of its rightful position of leadership in any program for remedying existing inequalities or injustices in the operation of the practice of preventive and curative medicine.

Our committee, therefore, recommends that the individual Fellows of the American College of Physicians be urged to study the facts presented in the report of the Committee on the Costs of Medical Care, uninfluenced by the acrimonious discussion which has been raised by the publication of the various recommendations, and we also recommend that the organized representatives of the medical profession in each community be urged to consider these problems in the light of their varying local needs and conditions, for it is our belief that by this method the enlightened leadership of the medical profession can point the way to improvements of great value, both to the public and to the medical profession itself.

**Dr. Wright Clarkson,**

Petersburg, Va., has given two lectures in the State within the last month on the prevention of cancer. One was on the night of Monday, February 20th, before the physicians of Harrisonburg, Va., and the surrounding territory and the nurses of the Rockingham Memorial Hospital, assembled for this purpose. The invitation was extended through Dr. Noland M. Canter, president of the local medical society.

On the night of Wednesday, March 8th, he gave a somewhat similar lecture before the citizens of King William County, the meeting being held in the Central High School at Enfield, by invitation of Dr. Hawes Campbell.

**Married.**

Dr. Earle Rawlings Ware, Fredericksburg, Va., and Miss Jane Tuggle Epes, Richmond, Va., March 11th.

Dr. Willie Kerns Dix, Richmond, Va., and Miss Avis Clifford Mathews, Atlanta, Ga., February 25th.

**Dr. A. W. Terrell,**

Lynchburg, Va., physician to Randolph Macon Woman's College since the beginning of that institution, was guest speaker at Founder's Day exercises in March. He told of the progress of the school since its beginning.

**Stuart McGuire Lectureship, Medical College of Virginia.**

The participants in the Stuart McGuire Lectureship series at the Medical College of Virginia, Richmond, April 25-27, 1933, will be Dr. Ronald T. Grant, Department of Clinical Research, University College Hospital Medical School, London, who will give three lectures on the Pathology of Endocarditis, and another lecture on the Arteriovenous Anastomoses in Human Skin; Dr. Louis Hamman, Johns Hopkins University, who will give a clinical-pathological conference; Dr. Tinsley Harrison, Vanderbilt University, who will lecture on cardiac dyspnea; and Dr. Paul White, Harvard University, who will give a clinic.

This program dealing primarily with the cardio-vascular system is open to the profession. Considerable attendance is expected from distant points.

**News Notes from the Medical College of Virginia.**

A portrait of Dr. Richard L. Bohannan, first professor of obstetrics and diseases of women and children, and one of the founders of the college, has been presented for the Founders' Room in the new library by the descendants of Doctor Bohannan. The portrait was done by John D. Slavin, a Richmond artist.

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Mr. Harold Beamer, of Pulaski, Va., who graduated in pharmacy last year, was a recent visitor to the college.

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Dr. H. B. Kellogg and Dr. Harold Jones, of Northwestern University and their instructive film on the anatomy of the pelvis were recently shown at the college. Dr. H. L. Osterud and Dr. H. H. Ware, Jr., requested this picture for the benefit of the medical students.

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The number of patient visits for the outpatient department in February totalled 5,097, which is slightly larger than the number recorded for February, 1932. The number of male and female patients treated was about equal with a total of forty-four per cent colored and fifty-six per cent white.

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Dr. W. T. Sanger, president, was the guest speaker at a meeting of the alumni in Roanoke the night of March 10th. Dr. Sanger discussed plans for the future development of the college and illustrated his talk by use of lantern slides. In December Dr. Sanger spoke to the Norfolk alumni and in April he will attend a meeting of the West Virginia alumni in Charleston.

The Board of Visitors of the College, at its mid-winter meeting, decided upon seven promotions in the senior faculty, as follows: Dr. Wyndham B. Blanton from associate professor to professor of history of medicine; Dr. W. R. Bond from associate professor of physiology and pharmacology to professor of physiology and associate professor of pharmacology; Dr. R. H. Courtney from assistant professor to associate professor of ophthalmology; Dr. Harvey B. Haag from associate professor of pharmacology and physiology to professor of pharmacology and associate professor of physiology; Dr. Daniel D. Talley from associate professor of roentgenology to professor of roentgenology, succeeding the late Dr. A. L. Gray; Dr. Harry Lyons from professor of peridontia and associate professor of oral pathology and therapeutics to professor of peridontia and oral pathology; and Miss Lulu K. Wolf from associate in nursing to assistant professor of nursing.

**News Notes from Duke University School of Medicine and Duke Hospital.**

During February and March the following visitors gave clinics at the Duke Hospital:

Dr. Addison G. Brenizer, of Charlotte, N. C. —February 21st—subject: Evolution of Thyroidectomy.

Dr. Hugh Trout, of the Jefferson Hospital, Roanoke, Va.—February 25th—subject: Surgical Treatment of Pulmonary Tuberculosis.

Dr. W. W. S. Butler, Jr., of the Jefferson Hospital, Roanoke, Va.—February 25th—subject: Transurethral Resection of Prostate.

Dr. Thomas M. Rivers, of The Hospital of The Rockefeller Institute for Medical Research, New York City—March 10th—subject: Filterable Viruses in Relation to the Practice of Medicine.

Dr. B. C. Willis, of the Boyce-Willis Clinic, Rocky Mount, N. C.—March 14th—subject: Perforated Wounds of the Abdomen.

**The Clinch Valley Medical Society**

Is to hold its regular semi-annual meeting on Saturday, April 22nd, at Norton, Va. An interesting program is to be presented as usual. Dr. G. B. Setzler, Pennington Gap, is president and Dr. C. B. Bowyer, Stonega, secretary-treasurer.

**Veterans' Hospital at Roanoke.**

The new general hospital of the Veterans' Administration at Roanoke, Va., plans for which are now in progress, will have a total capacity of 311 beds—for 205 white patients in the main building and 106 colored patients in colored patients' building. The site was donated by the city and consists of sixty acres, one and one-half miles west of Roanoke, between Old Bent Mountain Road and New Bent Mountain Road, overlooking the city.

The construction will consist of Main Building, Administration Building, Dining Hall and Kitchen with white attendants' quarters over, Nurses' Quarters, Manager's House, four Officers' Quarters and Service Building, namely: laundry and shops, storehouse, garage with colored attendants' quarters over, and boiler house. The style of the buildings will simulate those at Williamsburg, Va., with certain modifications.

The main building, with Administration Building on one side and Recreation Building on the other, will form a court in shape of a horseshoe, which is approached from either the Old Bent Mountain Road or the New Bent Mountain Road. There will be a two story corridor connecting these three buildings. The Dining Hall is just to the rear of the main building and connected to same by a two story corridor.

The colored patients' building is located to the south of the Dining Hall and connected to same by a corridor. This building faces on road which runs from main entrance of hospital past the main building and recreation building. The road after passing the colored patients' building runs almost parallel to the Old Bent Mountain Road and here are located the Nurses' Quarters, Manager's House and four Officers' Quarters on the high point of the site.

**Faculty and Staff Meeting, Medical College of Virginia.**

Dr. I. A. Bigger, chairman, announces that the regular scientific monthly meeting of the Faculty and Staff of the Medical College of Virginia will be held on Thursday, April 6, 1933, at 8:15 P. M., in the auditorium of Cabaniss Hall. The program will be as follows:

1. "Unusual Callus Formation in a Fracture of the Lower Leg. A Case Report"—Dr. Randolph L. Anderson.
2. "Abdominal Pregnancy and the Excretion of Placental Hormones Following Delivery"—Dr. H. Hudnall Ware and Dr. Rolland J. Main.

**Dr. William H. Turner, Jr.,**

Of the class of '18, University of Virginia, Department of Medicine, has located in Gordonsville, Va., where he is engaged in general practice. Dr. Turner was in China about seven and a half years under the Northern Presbyterian Mission Board. He was located for varying periods of time in Peking, Nanking and Nanhsuchow, doing general hospital and out-patient work.

**Dr. J. Shelton Horsley,**

Richmond, Va., was invited to give the Porter Lectures at the University of Kansas this year. The lectures were on March 28th and 29th, two of the lectures being to the Medical Department of the University in Kansas City and the third lecture at the University of Kansas at Lawrence, Kans.

The Porter lectureship was established only a few years ago, and the two previous lecturers have been Dr. Joseph Collins, of New York, and Dr. Lewellys F. Barker, of Baltimore.

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Dr. Horsley will also give an address before the Buffalo Academy of Medicine at Buffalo, N. Y., on Wednesday, April 5th.

**Dr. John W. Robertson,**

Onancock, Va., recently sustained a very painful accident while en route to Pocomoke City, Md., to attend an intercity Rotary meeting. The front tire blew out, the car became unmanageable and turned over in a ditch. Dr. Robertson, being on the rear seat, suffered the worst injuries—numerous cuts about the head and face and a rather painful injury to his left hip. Although laid up for several weeks, he has now completely recovered and is in active work again.

**Bulletin to be Published by Richmond Academy of Medicine.**

The Richmond Academy of Medicine, Richmond, Va., beginning March, is to publish a quarterly bulletin. It is to contain abstracts of papers presented at meetnigs, notices, and other items of interest to the profession.

Copies of the Bulletin will be mailed to physicians in Virginia and adjoining states.

**Dr. James Wilbert Love,**

Of the class of '28, Medical College of Virginia, has located in Alexandria, Va., with offices at 108 N. Washington Street, where he is engaged in general practice. Following graduation, Dr. Love interned in the Hospital Division of the Medical College of Virginia. After two years here, he went to Cleveland, Ohio, where he had secured a fellowship in medicine at the Crile Clinic. He was licensed by the National Board of Medical Examiners in 1929.

**The Mid-Tidewater Medical Society**

Will hold its regular quarterly meeting in Saluda, Va., Tuesday, April 25th, at 11:00 A. M. The usual interesting program is being arranged. Dr. Blair Spencer, Zanoni, is president, and Dr. M. H. Harris, West Point, secretary.

**Dr. Garcin Honored.**

Dr. Ramon D. Garcin, Richmond, Va., was recently presented with an automobile by the Grand Lodge of Virginia Masons, in appreciation of his thirty-three years' service as physician at the Virginia Maconic Home for children of Masons. Dr. Garcin has served this institution for a third of a century entirely without remuneration and during this period has lost only two cases at the Home.

**American Association for the Study of Goiter.**

The annual meeting of this Association is to be held in Memphis, Tenn., May 15th, 16th and 17th, with headquarters at Peabody Hotel. An elaborate program has been arranged. Each day from 8:00 to 10:00 A. M. will be given over to hospital clinics, and from 10:00 to 12:00 M., there will be diagnostic clinics and discussions. Papers will be presented at the afternoon sessions and on the first evening there will be addresses by the president and two other speakers. On the second day, there will be a garden party in the afternoon and a banquet in the evening. In all, the program will be interesting and attractive. Dr. Henry S. Plummer, Rochester, Minn., is president.

Members of the profession in good standing are cordially invited to attend this meeting and are also urged to join a special group sailing from New York City, July 26th, to attend the International Goiter Conference, to be held in Berne, Switzerland, August 10th, 11th and 12th. Special rates have been provided and daily programs arranged while en route to le Havre. Those interested should communicate promptly with Dr. J. R. Yung, corresponding secretary, Terre Haute, Ind., or Dr. Martin B. Tinker, Savings Bank Building, Ithaca, N. Y., Geographic Delegate for the states of Mary-

land, Delaware, New York, Pennsylvania and Virginia.

**Transferred to Hawaii.**

Captain Claude L. Neale, recently stationed at Fort Monroe, Va., and Captain Clyde L. Brothers, at Alcatraz, Calif., both of the class of '28, Medical College of Virginia, have been transferred to the Hawaiian Islands and sailed recently to take up their duties there.

**American Medical Association.**

At this time of the year, thoughts always turn to the annual meeting of the American Medical Association. This year, Milwaukee is to be host to Association and an excellent meeting is expected. All fellows who expect to attend are urged to make reservations as soon as possible.

As Chicago's World Fair is being held this year, this will be an excellent opportunity to "kill two birds with one stone." In addition to World's Fair Tours, other attractive trips can be planned to make attendance on the Milwaukee meeting especially worth while.

**Economic Loss Due to Mental Disease.**

According to a statement made by the New York State Department of Health, the cost of mental disease has recently risen to great significance. During the past ten years, about $92,000,000 has been spent by that State for the construction of hospitals for patients with mental disease. In 1932, over $20,000,000 was expended for the maintenance of such patients in the hospitals of the New York State Department of Mental Hygiene. At present, there are over 56,000 patients in its State hospitals and the number is increasing at the rate of 250 a month. At current rates, the annual cost of hospital care and treatment for these patients, including housing and general administration, amounts to about $2 per day or over $700 per year.

**Dr. James B. Woods, Jr.,**

Of Chinkiang, China, a recent visitor in Richmond, Va., has sailed for England where he will pursue a special course of study at the University of London. Dr. Woods is an alumnus of the Medical College of Virginia, in the class of '22.

**How Do You Do?**

The following appeared recently in a news release sent out by the Woman's Auxiliary to the American Medical Association:

> "Some pay their dues when due,
> Some when overdue,
> Some never do.
> How do you do?"

As we need cooperation, we will appreciate it if our members will send us an early answer to the verses.

**The Graduate Nurses' Association of Virginia,**

At a meeting of its board of directors recently, selected Richmond as its 1933 place of meeting, because of its central location. The sessions will be held on May 17th-20th, under the presidency of Miss Blanche Webb, director of the King's Daughters' nursing service of Norfolk.

**Virginia Tuberculosis Association.**

In addition to the splendid human record of service rendered by this Association during the past year, the financial statement as reported at the recent annual meeting in Richmond showed that the Association not only lived within its receipts but ended the year with a surplus of $931.00.

The total seal sale from the 17 Virginia cities and the 100 counties amounted to $75,716.72. After disbursements to the National Tuberculosis Association and the various local associations, there was a balance for the State Association of $17,866. Other income from memberships, donations and interest brought the total income to $18,353. The items of expense are covered under the following four general heads: health education, administration, seal sale, and organization in the field service. The splendid unselfish work of volunteers throughout Virginia supplemented greatly the work accomplished on a financial basis.

Officers elected at the annual meeting are: President, H. Laurie Smith, Ashland; vice-presidents, Dr. Kenneth F. Maxcy, University, and Mrs. H. D. Howe, Hampton; treasurer, George W. Call, Richmond; and secretary, Dr. Roy K. Flannagan, Richmond.

**Dr. U. W. Massie,**

Formerly of Fincastle, Va., has located for practice at Longacre, W. Va. Dr. Massie is a member of the class of '30, Medical College of Virginia.

**Mother's Day.**

The Maternity Center Association, 1 East 57th Street, New York, N. Y., has completed plans for the third annual Mother's Day Campaign, the object of which is to save the lives of women who now die needlessly from maternity causes. Last year, many medical societies, boards of health, women's clubs and civic organizations joined in the campaign to teach the public the vital importance of adequate maternity care. This year, it is hoped many similar meetings will be held by interested organizations throughout the country, during the week preceding Mother's Day—May 14th.

Material for programs is available, free of charge, on application to the above address. This includes outlines for meetings, material for radio talks, articles for newspaper use and editorial comment.

**Dr. E. G. Gill,**

Roanoke, Va., has been appointed a member of the board of visitors for the Virginia School for the Deaf and Blind at Staunton, Va. The appointment, made by Governor Pollard in February, is to fill the unexpired term of the late J. H. Lindsay to July 1, 1936.

**Dr. George W. Parrott,**

Recently of Charlottesville, Va., has located at New Market, Va., and is engaged in general practice there.

**Dr. Joseph L. Alexander,**

Staunton, Va., was recently elected color sergeant of the Stonewall Jackson Camp, Sons of Confederate Veterans, at its meeting in that city.

**Loses Home by Fire.**

Dr. John A. Owen had the misfortune to lose by fire his handsome ancestral home situated about six miles from South Boston, Va., on March 18th. As the fire was discovered early in the morning, it was impossible to secure aid in time to save but very little of the antique furniture.

**An International Congress for the Protection of Infancy**

Is to be held in Paris from the 4th to the 9th of July, 1933. The Congress is to be arranged in eight sections: maternity, first childhood, second childhood (children from 3 to 14 years); adolescence; abnormal childhood; social service; juridicial section; sundry papers. The organizers have obtained important reductions in fares on all French railways and hope to secure the same facilities from foreign railways. For further information, write the Secretary of the Congress, 26, Boulevard de Vaugirard, Paris XV, France.

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# Obituary Record

**Dr. Adam Tyree Finch,**

Well-known physician of Chase City, Va., died February 22nd, after having been in ill health for several months. He was 60 years of age and a graduate of the University of Virginia, Department of Medicine, in 1896. Dr. Finch was former commander of the Virginia Department of the American Legion and also colonel in the Medical Corps Reserve, U. S. A. Dr. Finch organized and managed for more than ten years the Chase City Hospital, and served as president of the county board of education. He had been a member of the Medical Society of Virginia for thirty-five years, during which time he was an active worker and always took great interest in the affairs of the Society. He had been secretary of the Mecklenburg County Medical Society for a number of years. Dr. Finch is survived by his wife and five children.

**Dr. William A. Vaughan,**

A prominent physician of the Valley of Virginia, and for forty-five years a practicing physician at Timberville, Va., died at his home in that place on March 1st, after a short illness. He was seventy-four years of age and this illness which terminated fatally was the first of his life time. Dr. Vaughan was a native of Rockingham County, Va., and graduated from Jefferson Medical College, Phil-

adelphia, in 1884. He had been a member of the Medical Society of Virginia since 1885. At the time of his death, he was president of the Rockingham County Board of Health.

**Dr. George Wythe Tompkins,**

Coeburn, Va., died February 27th, at the age of sixty years. He was a graduate of the former University College of Medicine, Richmond, Va., in 1896. Dr. Tompkins was a charter member of the Wise County Medical Society, had been a member of the Medical Society of Virginia since 1897, and was also a fellow of the American Medical Association.

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The Wise County Medical Society at a meeting following Dr. Tompkins' death, passed the following resolutions:

WHEREAS, Dr. George Wythe Tompkins was, on February 27, 1933, removed from our midst by death, and

WHEREAS, he had been a distinguished member of our profession and a charter member of this Society, be it

RESOLVED, That in his passing the medical profession suffered a grievous loss, the community in which he lived and the people whom he served a wise counselor, sympathetic friend and a faithful attendant;

That our sympathy be extended to his family and clientele;

That a copy of this be recorded in the minutes of the Wise County Medical Society, a copy sent the family, and a copy to the VIRGINIA MEDICAL MONTHLY.

J. B. WOLFE,
J. H. HAGY,
W. R. CULBERTSON,
*Committee.*

**Dr. James McTeer Miller,**

Wytheville, Va., a prominent physician of Southwestern Virginia, died suddenly on March 12th, death being due to myocardial failure. He was a native of Grayson County, Va., and sixty-three years of age. He graduated from the former College of Physicians and Surgeons, Baltimore, in 1896, and joined the Medical Society of Virginia several years later. He was a former president of and active worker in the Southwestern Virginia Medical Society and was interested in many civic enterprises.

**Dr. Martin D. Delaney,**

Alexandria, Va., died February 10th. He was 58 years of age and a graduate in medicine from the Georgetown University, Washington, D. C., in 1898. Dr. Delaney had been a member of the Medical Society of Virginia since 1900 and was an associate member of the Medical Society of the District of Columbia.

**Dr. Clarence Albert Shore,**

Raleigh, N. C., recent president of the Tri-State Medical Association of the Carolinas and Virginia, died February 10th, just prior to the annual meeting of that association. He was fifty-nine years of age and was a graduate in medicine from Johns Hopkins University School of Medicine in 1908. He had been director of the North Carolina State Laboratory of Hygiene for a number of years and was a former president of the North Carolina State Board of Medical Examiners.

**Dr. David Thomas Tayloe,**

Director of the Washington Hospital, Washington, N. C., died on January 10th, at the age of 68. He was graduated in medicine from Bellevue Hospital Medical College of New York in 1885, was an active member of the Medical Society of the State of North Carolina, and a fellow of the American College of Surgeons.

**Dr. Freeman Valentine Walker,**

Captain, U. S. Army, retired, died at his home, Bluffton, S. C., on January 21st, death being due to angina pectoris. He was 72 years of age. Dr. Walker was a graduate of the University of Virginia, Department of Medicine, in 1881 and entered the Army as an assistant surgeon in 1886. He was retired in 1906.

**Dr. Joseph Dixon,**

Greenville, N. C., died January 21st, after an illness of sometime. He was 68 years of age, and studied medicine in Richmond, graduating from the Medical College of Virginia in 1894.

**Dr. Alfred S. Burdick,**

President of the Abbott Laboratories of North Chicago, Ill., died February the 11th, at the age of 66 years. Death was due to pneumonia. Dr. Burdick became president of the Abbott Laboratories in 1921 and many improvements in this Company in the last twelve years are a tribute to his genius and wisdom.

**Dr. Thomas Vaden Brooke**

Died at his home in Sutherlin, Va., March 12th, at the age of 85. He was a graduate of the Medical College of Virginia in 1872. Dr. Brooke was a Confederate veteran and had practiced medicine in Pittsylvania County for forty-five years.

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MEDICAL SOCIETY OF VIRGINIA 64TH ANNUAL MEETING, LYNCHBURG, OCTOBER 24-26, 1933

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# Virginia Medical Monthly

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## THE ETIOLOGY AND PREVENTION OF HEART DISEASE.*

J. EDWIN WOOD, JR., M. D., University, Va.

Organic heart disease is now "Captain of the Men of Death." This grim leader advances steadily, equipped with an array of formidable and mysterious weapons. It is our present purpose to describe the nature of this deadly attack and to outline briefly the strength and weakness of the defense. For a battle of such magnitude it will appear that this defense has been courageously though somewhat imperfectly organized. This does not imply any criticism of our profession but rather a lack of special knowledge which must come with intensive investigation and the passage of time.

The importance of organic heart disease becomes manifest upon the consideration of mortality tables of the past ten years. For the U. S. Registration Area in 1919 the death rate from organic heart disease was 146 per 100,000 as compared with 211 per 100,000 in 1929. A more critical examination of the several age groups indicates, however, that the increasing mortality occurs in the latter decades almost entirely. Many writers have indicated that more young people survive the infectious diseases to die ultimately of cardiac disease. In addition to this increasing age of the population, more frequent diagnosis and consequent record has been made of the degenerative changes in heart muscle. Be this as it may, Dublin[8] has shown that one in every five persons, surviving the age of ten, eventually dies with heart disease. Aside from this impressive mortality rate there can be no doubt as to the importance of this largely unsolved problem. Unfortunately there are all too many instances when our friends and patients succumb prematurely to heart disease.

I. *Etiology.* Only in the past eighteen years has there been a concerted effort to collect data relative to the different cardiac types. The more mature members of this Society are well aware of the confusion in terms prior to 1914 and even 1921 and can appreciate what a renaissance the present etiological classification of heart disease represents when compared with the previous anatomical and structural nomenclature. There is no doubt that this change represents progress and that such blanket diagnoses as "myocarditis" and "mitral regurgitation" need no longer be thrown over a half-dozen divergent cardiac conditions.

White and others, gathering inspiration and courage from Cabot, have made valiant efforts to improve our understanding and place the etiological classificaton of heart disease on as sound a footing as present basic knowledge will allow. The roles of hypertension, arteriosclerosis, rheumatic infection, syphilis, thyrotoxicosis and other less major factors have become fairly well known. The recognition of the type of heart disease which one or several of these fundamental agents may produce is a knowledge which has been largely acquired through the correlation of clinical and pathological data, aided by rapid advancement in roentgenology and electrocardiography. The main criteria for a modern diagnosis of heart disease as to *etiology*, *structure* and *function* are now common knowledge and, while doctors may differ in special cases, there is a vast common basis for discussion.

From time to time this newer classification has been statistically applied so that now a number of carefully planned group studies are available for tabulation and comparison. As shown in Table I, different geographical sections have been represented and climatic influences may be noted. Each of the writers seems well aware of the difficulties attendant upon an accurate evaluation of such data and one or another has commented on unbalanced age groups, differences in social strata racial tendencies and other factors influencing their studies. Three[3-4-7] excellent discussions (Table II) from the South offer racial comparisons

*From Department of Internal Medicine, School of Medicine, University of Virginia.

Read as part of the Symposium on Diseases of the Heart at the sixty-third annual session of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

TABLE I

Etiological Classification 8,182 Cases Organic Heart Disease
From Literature (1) (2) (3) (4) (5) (6) (7)

| No. Cases | Section | Hyp.-Art. | Rhm. | Syp. | Thy. | Con. | S. B. E. | Mis. | Unk. Unc. | Ang. |
|---|---|---|---|---|---|---|---|---|---|---|
| 300 | Va | 59.6 | 21.9 | 11.0 | 3.6 | 1.0 | 1.3* | ..... | 2.3 | 9.3* |
| 323 | New Eng | 44.9 | 39.2 | 6.8 | 5.6 | 1.5 | 1.2* | 1.5 | .6 | 8.0* |
| 2,421 | New Eng | 48.1 | 39.5 | 3.9 | 2.9 | 1.5 | 1.9‡ | 2.1 | 3.4 | 14.6* |
| 915 | Texas | 61.4 | 7.3 | 19.3 | 1.3 | .7 | 1.5 | 1.3 | 4.9 | 2.3 |
| 1,660 | Texas | 77.4 | 3.4 | 12.7 | 2.5 | .7 | .3* | 1.0 | 2.3 | .6* |
| 1,051 | N. Y. C | 22.2 | 42.7 | 8.6 | ..... | ..... | ..... | 8.6 | 17.8 | † |
| 867 | Rocky Mts | 36.0 | 44.0 | 1.1 | 9.3 | 1.1 | .2 | .9 | 7.3 | † |
| 645 | Tenn | 67.9 | 10.5 | 7.9 | 1.1 | 3.3 | 1.7 | 2.2 | 3.1 | † |

All group figures expressed in per cent.
Abbreviations: Hyp.-Art.—Hypertensive, Arteriosclerotic and combined Hypertensive and Arteriosclerotic; Rhm.—Rheumatic; Syp.—Syphilitic; Thy.—Thyrotoxic; Con.—Congenital; S. B. E.—Subacute Bacterial Endocarditis; Mis.—Miscellaneous; Unk.—Unknown; Unc.—Unclassified; Ang.—Angina Pectoris.
*Already included in other groups.
‡Partially included in other groups.
†Not stated for whole series.

TABLE II

Comparison of Etiological Types of Organic Heart Disease in 1,354 Whites and 1,866 Negroes
(From Literature)

| | Texas (4) | | Texas (5) | | Tenn. (7) | | Average | |
|---|---|---|---|---|---|---|---|---|
| | W. | N. | W. | N. | W. | N. | W. | N. |
| †Hyp.-Art | ..... | ..... | ..... | ..... | 65.1 | 71.8 | ..... | ..... |
| †Hyp | 45.3 | 48.0 | 42.5 | 63.2 | ..... | ..... | 68.4 | 68.6 |
| †Art | 19.8 | 6.3 | 35.8 | 13.6 | ..... | ..... | ..... | ..... |
| Rhm | 10.4 | 3.6 | 7.5 | 1.7 | 15.1 | 4.3 | 11.0 | 3.2 |
| Syp | 9.0 | 31.6 | 6.7 | 15.2 | 2.2 | 15.4 | 5.9 | 20.7 |
| Thy | 1.4 | 1.2 | 2.8 | 2.3 | 1.1 | 1.1 | 1.7 | 1.5 |
| Con | 1.2 | .2 | .6 | .7 | 4.1 | 2.1 | 1.9 | 1.0 |
| S. B. E | 1.8 | 1.2 | ..... | ..... | 2.7 | .4 | 2.2 | .8 |
| Mis | 1.4 | 1.2 | 1.6 | .6 | 2.7 | 1.4 | 1.9 | 1.0 |
| Unk | ..... | ..... | 2.4 | 2.3 | ..... | ..... | 2.4 | 2.3 |
| Unc | 5.6 | 4.1 | ..... | ..... | 3.8 | 2.1 | 3.1 | 2.0 |
| Ang | 4.1 | 0 | .6* | 0 | ..... | ..... | 2.3 | 0 |

All group figures expressed in per cent.
Abbreviations as in Table I.
*Already included in other groups.
†Averaged as one group (hypertensive and arteriosclerotic) in final column.

and averages of these for the negro cases correspond fairly closely to another classification[9] including negro patients only.

Examination of Tables I and III indicates that the hypertensive and arteriosclerotic group incidence for the whole country varies from 22 to 77 per cent. This range is affected more by the relative occurrence of other groups than by race of geographical location. Furthermore, it seems fair to state that could this type of heart disease be eliminated, half of the problem of heart disease would be wiped out.

Rheumatic heart disease varies in frequency from 3 to 44 per cent, a variation brought about largely by climate and partially by race. The former influence has been and is being discussed at some length[10-11] while the latter racial tendency is less well established. It may be generally stated that another quarter of all the heart disease in this country would vanish with the disappearance of rheumatic infection, a consummation devoutly to be wished.

Syphilis, a treatable and preventable infection, causes a variable amount of heart disease, largely dependent on the racial division in a

given section. The problem of syphilitic heart disease for the country probably averages about 10 per cent of the whole (Table III).

TABLE III

Summary
Etiology of Organic Heart Disease

| Type | Per Cent | |
|---|---|---|
| | Variation | Average |
| Hyperten. and Arterio. | 22–77 | 50 |
| Rheumatic | 3–44 | 24 |
| Syphilitic | 1–19 | 10 |
| Thyrotoxic | 1– 9 | 5 |
| Congenital | 1– 3 | 2 |
| Miscellaneous | 1– 9 | 5 |
| Unclassified | 2– 6 | 4 |

While it behooves the Southern branch of our profession to concentrate on the ravages of hypertension and arteriosclerosis, and syphilis in the negro particularly, relatively speaking, our New England physicians, for example, have a dramatic problem in rheumatic infection with hypertensive and arteriosclerotic types an almost equal consideration.

There seems to be little doubt that the basic factors of arteriosclerosis, hypertension, rheumatic infection and syphilis account for 85 per cent of all heart disease in our population.

II. *Prevention.* Burwell[7] has aptly stated the two phases of this discussion: (1) The control of basic conditions leading to heart disease, and, (2) the relief and prevention of heart failure.

(1). The etiology of organic heart disease has become somewhat clearer but its prevention in large part remains clouded. True enough, syphilis is quite amenable to control. The prevention and early treatment of lues would eliminate many cases of cardiac disease, but even so fanciful an accomplishment as the entire eradication of syphilis would solve only one-tenth of the problem. In spite of this unimpressive fraction, syphilis is the field in which the most brilliantly successful anti-heart disease campaign is being waged today.

Numerous correlations have been attempted relative to the other major factors leading to heart disease, in the hope that some element of cause and effect might be established and a corresponding avenue of prevention opened. Many of these attempted correlations have failed. Some deserve comment either on account of their one time popularity or future promise.

TABLE IV

Percentage of Cases Showing High Blood Pressure Readings (20 mm. Hg. or More Above Average for Age) in Each Age Group. 16,662 White Males, Ordinary Department. Metropolitan Life Insurance Company, 1921. Examinations by Life Extension Institute

| Impairment or Hygienic Defect | Total Examined at all ages | Percentage in Each Age Group Showing Systolic Blood Pressure 20 mm. Hg. or More Above Normal | | | | | |
|---|---|---|---|---|---|---|---|
| | | All Ages | Under 25 | 25 to 34 | 35 to 44 | 45 to 54 | 55 and Over |
| Weight: | | | | | | | |
| (a) 20% or more overweight | 2,033 | 15.7 | 5.1 | 11.2 | 10.7 | 22.4 | 32.0 |
| (b) Normal weight* | 4,251 | 6.1 | 5.6 | 4.5 | 4.0 | 8.2 | 23.1 |
| Diet: | | | | | | | |
| (a) Too high protein diet | 6,253 | 7.3 | 5.1 | 5.2 | 5.7 | 10.0 | 22.2 |
| (b) Residue† | 10,105 | 7.4 | 4.9 | 5.0 | 5.3 | 10.4 | 23.5 |
| Use of Tobacco: | | | | | | | |
| (a) Excessive use of tobacco | 5,466 | 6.6 | 6.8 | 4.8 | 4.3 | 10.8 | 20.6 |
| (b) Residue† | 10,892 | 7.7 | 4.3 | 5.2 | 6.1 | 10.0 | 23.9 |
| Tonsils: | | | | | | | |
| (a) Enlarged, septic or buried tonsils | 4,330 | 7.4 | 5.5 | 5.2 | 7.1 | 12.2 | 26.1 |
| (b) Residue† | 12,028 | 7.3 | 4.7 | 5.0 | 4.9 | 9.8 | 22.6 |
| Dental Condition: | | | | | | | |
| (a) Heavy dentistry | 6,904 | 7.6 | 6.2 | 5.6 | 6.4 | 10.8 | 18.1 |
| (b) Residue† | 9,454 | 7.1 | 4.4 | 4.7 | 4.8 | 9.8 | 26.2 |
| Total Cases Examined | 16,358‡ | 7.3 | 5.0 | 5.1 | 5.5 | 10.2 | 23.1 |

*Five per cent. above or below average weight for age and height.
†All others not showing specified impairment.
‡In 304 cases, blood pressure readings were not taken.

Both hypertension and arteriosclerosis may lay some portion of their incidence at the door of heredity. Even if this be accepted there is no practical contemporary method of control. Hypertension has acquired a number of heterogeneous associations, such as focal infection, high protein diet, excessive use of tobacco, pregnancy and obesity. Though each has in large or small measure contributed to past discussion of hypertension, only the last named enjoys statistical cast. While Table IV[12] serves to indicate the apparent definite association between obesity and hypertension, this does not imply cause and effect. Such a correlation is impressive, however, and well worth consideration for the individual case, especially in view of the 30 per cent increased mortality in obese heart disease patients, as indicated in the Metropolitan Life Insurance tables.[21]

The control of obesity may then be of some importance in the prevention of individual instances of hypertension, and certainly the reduction of overweight in many patients may definitely delay cardiac defeat. It is surprising to find so little reference to the not infrequent association of pregnancy and hypertension. While there is no clear evidence that pregnancy is a factor in the cause of hypertension, occasionally it does seem to be associated with the beginning of this phenomenon.[14] There is little doubt that pregnancy does accelerate an already established hypertension, a situation that can increase the incidence of heart disease.

Many debatable points also arise in a discussion of the prevention of rheumatic fever and the allied manifestations. Although low grade contagion in rheumatic infection may be admitted, isolation is impracticable. The value of tonsillectomy as a preventive measure in the recurrence of rheumatic infections is still controversial. Studies featuring large groups of children[15-16] seem to indicate that tonsillectomy has little effect on rheumatic recurrences if performed after clinical manifestations of the syndrome, but a protective value of some 30 per cent if accomplished before rheumatic infection. Here, again, a decision must rest on the merits of the individual case rather than upon statistical conclusion. In the simple matter of rest every precept counsels a generous measure of this time honored precaution. It is indeed difficult to estimate its exact value, but rest properly timed is our greatest protection against major rheumatic involvement of the heart. This, too, often fails in the prevention of rheumatic heart disease. More recently, climate has been used to advantage in the limitation of prolonged rheumatic infection. In a selected case, barring economic difficulties, the removal of the patient to certain warm climates may curtail the duration of the rheumatic infection and materially lessen the chances of further cardiac damage.[11-13] Following the statement of Swift's hyperergy hypothesis for rheumatic fever, intravenous vaccination with suitable streptococci loomed in the foreground as a possible preventive measure. This field has not been fully explored, but early work by Wilson[17-18] and Stroud[19] fails to indicate a practical value with present technique.

The question of permanent damage to the heart from thyrotoxicosis alone does not seem to be quite settled.[20] Opinion concurs that acceleration of an already existing cardiac impairment, either from organic disease or age, is the chief role of thyrotoxicosis. Just whether prolonged hyperthyroidism alone will cause hypertrophy need not extend this discussion. Control of hyperthyroidism, though not perfected, has reached a point where early application of present therapeutic knowledge may definitely prevent otherwise progressive heart disease.

(2). The Prevention and Treatment of Heart Failure. This, at last, is familiar ground. Much can be done to lengthen the life span in many patients with heart disease even though the initial injury could not have been prevented. Here the physician swings into action, using choice weapons of common sense and special knowledge. A discussion of the treatment of heart failure must come elsewhere, and to this brilliant chapter we must turn for an account of the courage and resource displayed by our forces in this battle against heart disease.

## Conclusions

Arteriosclerosis, hypertension, rheumatic infection, and syphilis are the basic factors leading to eighty-five per cent of organic heart disease in this country.

The prevention and early treatment of syphilis would solve ten per cent of the problem.

The larger portion of heart disease preven-

tion is not suited to public health control, but depends upon the knowledge, common sense and industry of the individual physician as applied to his individual patient.


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## ACUTE AND SUBACUTE ENDOCARDITIS.*

WALTER B. MARTIN, M. D., Norfolk, Va.

Active infection of the endocardium may be divided for clinical purposes into three groups, namely; acute bacterial endocarditis, acute rheumatic endocarditis, and subacute bacterial endocarditis. While this classification is not altogether satisfactory, it serves as a basis for an orderly review of the subject.

Acute bacterial endocarditis has more of an academic than a practical interest. It frequently goes undiagnosed until autopsy or, if suspected, has little bearing on the outcome. It is usually associated with acute general sepsis or occurs as a late complication of some other systemic disease. In cases of general sepsis associated with acute endocarditis it may be difficult to say what part the endocarditis plays in keeping alive the general infection, but in most instances its role is secondary to some other focus of infection. Furthermore, the progress of the general infection is usually so rapid and proceeds so generally to an early fatal termination that the actual damage to the endocardium has little part in the outcome. Patients die, not from the endocarditis, but from the overwhelming toxemia of the disease. Cases less acute in their course may display the embolic phenomenon more characteristic of subacute bacterial endocarditis.

The lesion on the endocardium is distinctive in character, hence, the name often employed of ulcerative endocarditis. This type of lesion is particularly found when the staphylococcus aureus is the infecting organism. The organisms commonly responsible for this form of endocarditis are the haemolytic streptococcus, staphylococcus aureus, the pneumococcus, less frequently the gonococcus, the meningococcus, the influenza bacillus, and rarely organisms of the colon-typhoid group.

Treatment in general is the treatment of sepsis. It would seem that the principal hope would be in the early detection and elimination of the primary source of infection. The results to be obtained are best exemplified in lateral sinus thrombosis. Quite frequently in patients with this condition with blood culture showing numerous colonies of the haemolytic streptococcus, there is prompt sterilization of the blood stream following ligation of the jugular and drainage of the infected sinus area. After secondary foci have been set up on the endocardium or in other inaccessible areas, the outlook is practically hopeless.

Acute rheumatic endocarditis is a part of a systemic disease which manifests itself in the joints, central nervous system, skin and arteries, as well as in the heart. It should be emphasized also that the heart infection is not confined to the endocardium, but that the myocardium and the pericardium are frequently involved. In fact, the symptoms of the disease ordinarily described as acute rheumatic endocarditis arise more often from damage to the myocardium and pericardium than from injury to the endocardium.

Invasion of the heart valves probably takes place through the small blood vessels, passing

*Read as part of the symposium on Diseases of the Heart at the sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

out into the leaflets from the base of the valves. The infection extends through the endothelial layer and on these denuded surfaces small collections of platelets and fibrin take place. As these become organized the typical nodules of acute rheumatic endocarditis are formed. It should be remembered that these nodules are comparatively small and are firmly adherent to the underlying structure. They do not readily break loose to form emboli on the one hand, nor do they seriously interfere with the function of the valve on the other. These features account in part for the difference in the clinical picture between acute rheumatic and subacute bacterial endocarditis.

These nodules tend to localize along the line of valve closure, although they may extend to other parts of the endocardium. The focal inflammatory areas in the endocardium are similar in structure, although not as typical as the Aschoff bodies found in the myocardium so characteristic of rheumatic infection of the heart. The importance of the acute endocardial lesions lies not in its immediate effect on heart function, but in the distortion of the valvular structure that takes place during the process of healing, leading finally to the familiar picture of chronic rheumatic valvular disease.

While it is commonly accepted that some strain of the streptococcus group is the responsible etiological agent, this has not yet received adequate proof. Positive blood cultures are the exception and bacteria have not been demonstrated in the focal lesion. Whether the changes in the endocardium are due to bacterial invasion, the action of a virus, or the effect of an allergic reaction, remains to be proven.

While the vast majority of patients suffering from acute rheumatic fever have an associated heart involvement, this fact may be readily overlooked. There are few characteristic symptoms during the acute stage, and practically no symptoms as far as the endocardium is concerned. Pain over the precordium, tachycardia out of proportion to the temperature and persisting as the temperature falls, continued low-grade temperature after the acute joint symptoms have subsided, changes in the quality of the heart sounds, the appearance of changes in rhythm, especially auricular fibrillation, or partial block, should all suggest cardiac involvement. When a case is under prolonged observation, the appearance of a murmur not present before, or the increase in a mitral systolic murmur previously noted, is of importance. Changes in conduction time can be demonstrated by means of electrocardiographic tracing in a considerable percentage of cases. It is to be noted that most of these signs and symptoms have their origin in the myocardium rather than the endocardium. In any case of acute rheumatic fever, no matter how mild, endocarditis and myocarditis should be assumed to exist until satisfactorily disproven, and if in doubt the patient should be treated as if the condition were known to exist.

The treatment of acute rheumatic endocarditis can be summed up in the one word, rest. Very few patients die of acute rheumatic heart disease, and these few succumb on account of myocardial or pericardial damage. Drugs, except to alleviate pain and promote rest, have no field. The patient should be kept at rest until all evidence of active infection has subsided, and return to any activity should be in a most gradual way. The complete subsidence of temperature, return of the pulse rate to normal, the restoration of the blood picture to normal, should take place before any activity is considered.

Subacute bacterial endocarditis presents a characteristic clinical picture associated with a definite and uniform pathology. By far the greater percentage of these cases are due to the streptococcus viridans. Occasionally other non-haemolytic strains of the streptococcus may be found, or such organisms as the gonococcus, the meningococcus, the influenza bacillus, the staphylococcus albus, and the micrococcus melitensis. Infection usually takes place on an endocardium previously damaged by infection, or in a congenitally defective heart.

The endocardial lesion consists of loosely knit vegetations, most commonly on the mitral valve, often extending out on the chordae tendinae and on the wall of the auricle. These vegetations consist of thrombotic material on an ulcerated base. Partial organization takes place at the base, but the vegetations are larger, softer and much less firmly adherent to the underlying structure than are the rheumatic nodules. They are consequently much more easily dislodged and borne as emboli to distant points in the body. It is this tendency to form emboli that gives rise to the outstanding clinical feature of this disease. Furthermore, these vegetations are swarming with bacteria, shielded from the natural protective substance in the blood stream or bactericidal agents in-

troduced from without. There is, however, a rather fine balance between the invasive power of the organism and the protective forces of the blood. It seems apparent that such organisms as are discharged into the blood stream are quickly disposed of. These cases will show positive blood cultures over a period of months without presenting the symptoms of a general sepsis and without setting up distant secondary foci. Next to embolic phenomena, the most striking feature of this disease is the tendency to a steadily progressive anemia.

It is doubtful whether the mechanical effect of the endocarditis itself affects materially the course of this condition. It is true that as the disease progresses evidence of decompensation appears, but this is probably due to the combined effect of anemia, the action of toxins on the heart muscle, and the handicap of the old valvular lesions on which the subacute infection is grafted. My own experience is drawn from twenty-five cases that have come under my observation during the past twelve years.

It is remarkable how closely most of these cases follow a definite pattern. The onset is often so gradual that the patient can fix no definite time at which he became sick. Many of them are up and around for weeks after the signs of the disease are quite evident. Six of my cases have walked into my office with histories that indicated the disease had been progressing for weeks or months, in one instance for over a year. Occasionally the patient will relate the onset to some occurrence such as a severe chilling, an acute cold, or even an accident. The general symptoms are those based on fever, toxemia, and anemia, such as weakness, depression, fatigability, sweats, headache, and loss of appetite. The more characteristic signs and symptoms are those resulting from the seeding out of emboli. The appearance of the skin is often quite striking, the so-called "cafe au lait" appearance of Libman. This is so evident at times as to suggest a high degree of jaundice. It is not dependent, however, on an increase of serum bilirubin in the blood, nor related to the degree of anemia. In one patient who presented this appearance most markedly the haemoglobin was 100 per cent, and the serum bilirubin 2 mg. per litre.

Emboli lodge in the skin, producing petechial spots or larger ecchymoses. Small, very tender red spots may appear in the tips of the fingers or toes. Underneath the finger-nails there may be elongated haemorrhagic areas. Similar spots may be found in the sclerae. Sudden failure of vision in an eye may result from the lodgment of an embolus in the central retinal artery. Deposits in the brain give rise to symptoms varying from a slight transitory palsy or a brief aphasia to complete hemiplegia or sudden death. Enlargement of the spleen which is demonstrable in almost every case is brought about by repeated splenic infarcts. With this enlargement there is usually a perisplenitis present, producing the left upper quadrant pain so frequently encountered. Infarctions of the kidney are common, and are associated with the appearance of blood and albumin in the urine. At the same time pain is experienced in the kidney region. One of my cases was referred to me as acute haemorrhagic nephritis on account of these findings. Emboli to other abdominal viscera no doubt take place although their results are less apparent. Sudden attacks of obscure abdominal pain accompanied by further elevation of temperature are not infrequently seen. Emboli in the joints with transitory swelling and pain in the part are common. Occlusion of fairly large arteries in the extremities occasionally occurs.

The temperature curve is variable. The patients may run a very low-grade temperature for months interrupted from time to time by sudden rises that gradually subside after a few days. These sudden elevations are usually associated with evidence of lodgment of fresh embodi. There may be fairly long periods of complete remission of temperature elevation.

Blood cultures are usually positive. In only two of my cases did we fail to obtain positive cultures. In the cases giving positive cultures, the streptococcus viridans was present in all but two cases. In these two instances a non-haemolytic, non-pigment producing streptococcus was obtained. It was noted that both of these cases progressed more rapidly than the usual viridans infection. Both terminated in three to four months from the onset.

While the disease is characterized by a progressive anemia, this is not always present when first seen. In one instance the haemoglobin was 100 per cent at the first examination and in two others an initial haemoglobin of over 90 per cent was found. The average for all cases when first seen was 69 per cent and the lowest found was 39 per cent. The anemia is of the secondary type but in most instances the color index is near one. The average found

for all cases was .91. The white blood count varied from 4,100-17,500. Fifty per cent of the cases had counts of under 9,000 and 83 per cent were under 12,000. Total counts with a range of 5,000-8,000 are quite common. In a number of instances both the total white count and the differential formula were normal, although most of the cases showed a percentage rise in the polymorphonuclear cells. In the terminal stage there is a tendency to a fall in the total count and in both the relative and absolute number of granulocytes. This together with the severe anemia and a color index near one suggests a fairly high degree of bone marrow aplasia.

The various methods of treatment advocated have so far not affected the mortality. While there are a few recorded cases of recovery, it is doubtful whether recovery in any particular case can be related to the treatment. Transfusions both with immunized and non-immunized donors have been used. Various chemicals, such as mercurochrome, acroflavin, gentian violet, arsephenamine, neo-arsephenamine, and cacodylate of soda in large doses, have been introduced into the circulation. Various types of anti-streptococcic sera have been employed; all, with a few individual exceptions, have met with the same melancholy results. Occasionally a case is spontaneously arrested under general supportive treatment. In only two instances have I seen recovery from streptococcus viridans septicaemia and in neither one of these cases was there satisfactory evidence of endocarditis. In both instances the blood stream became sterile and remained so after an unusually high rise of temperature, to 106 in one case and to 107 in the other.

### Summary

Acute bacterial endocarditis appears in association with acute sepsis or as a late complication of other constitutional disease. It has no characteristic symptomatology and its progress and treatment is that of the primary disease.

Acute rheumatic endocarditis is usually a part of a more general heart infection. During the acute stage the principal diagnostic symptoms are the result of myocardial and pericardial involvement. The importance of the endocarditis is due to the fact that during the process of healing the heart valves affected become deformed and distorted, resulting in permanent stenosis or insufficiency of varying degree.

Subacute bacterial endocarditis is a striking clinical entity characterized by a prolonged course, irregular fever, progressive anemia, and a group of symptoms resulting from the deposit of emboli in the skin, brain, spleen, kidneys, joints, and other organs.

339 *Boush Street.*

## CORONARY DISEASE.*

GEORGE B. LAWSON, M. D., Roanoke, Va.

Much interest has been shown in coronary disease in the last few years; it is better understood clinically and the newer instruments of precision such as the electrocardiograph have aided wonderfully in heart studies. However, it seems that coronary disease is increasing, probably due to the hurry and strain of modern civilization.

It is rather to be expected that the blood vessels supplying a muscle so continuously active as the heart would very frequently show signs of wear. Dr. Osler was fond of quoting the old axiom, "that a man is as old as his arteries." In like manner, the condition of the heart muscle depends a great deal on the condition of the arteries supplying it.

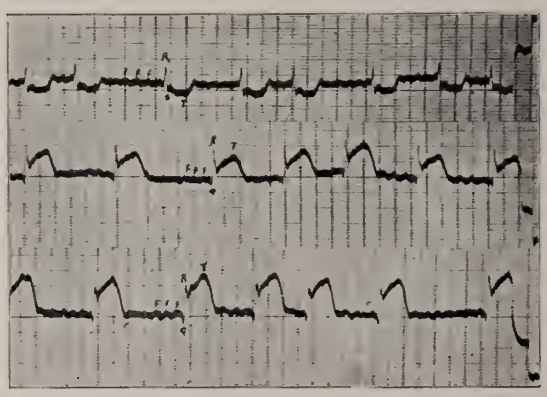

Fig. 1.—Electrocardiogram of patient, taken March 4th, four hours after obstruction of coronary artery. The Leads are I, II, and III from above downward. The two steps at the end of the lead are caused by introduction of 2 millivolts in the circuit with the patient, and serve as control of the standardization. The space between the corresponding line of each pair of ordinates is 0.20 second.

Pardee's sign taken from Dr. Pardee's original article in **Archives of Internal Medicine.**

The T wave comes off high from the descending limb of the R.

Coronary disease is either a gradual narrowing of the coronary arteries usually due to sclerosis with symptoms increasing slowly in

*Read as part of the symposium on Diseases of the Heart at the sixty-third annual meeting of the Medical Society of Virginia in Richmond, November 1-3, 1932.

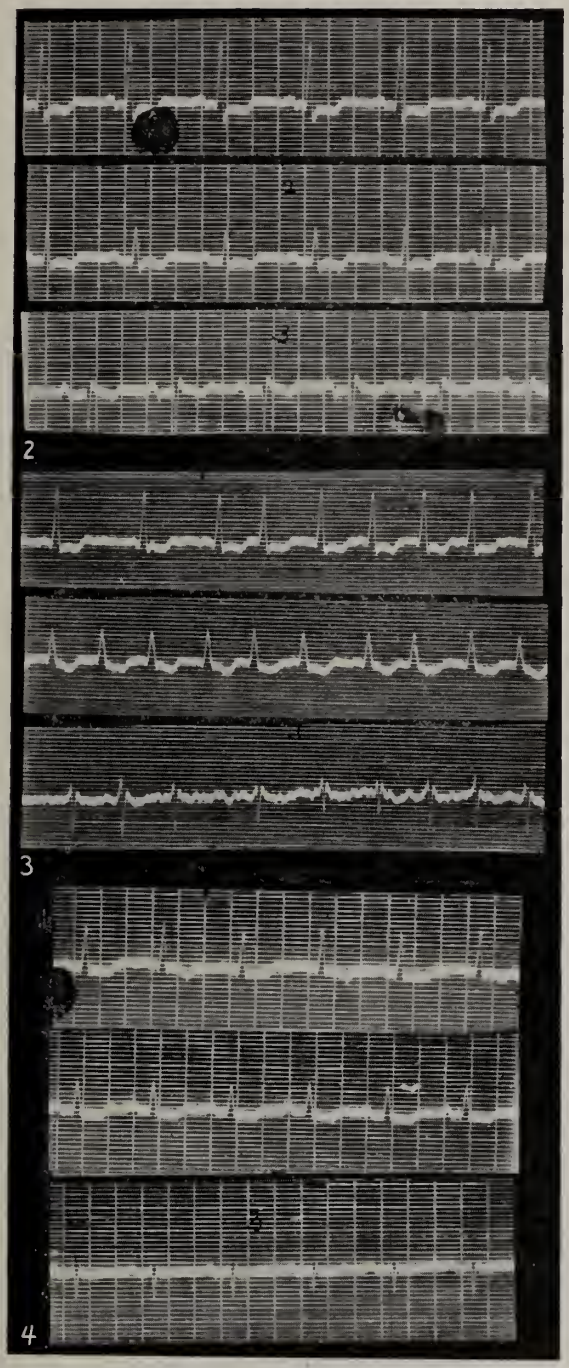


Fig. 2.—Patient W. W. Record taken five weeks after thrombosis. This patient had very severe pain and developed a pericardial friction rub.

The record shows an inversion of the T wave and at times almost a typical V shape.

Fig. 3.—Patient W. W. This record is on the same patient as No. 2, twelve weeks after the primary attack.

This shows a typical fibrillation with inversion of the T wave and slurring of the QRD interval in the second lead. The T wave is inverted.

Fig. 4.—Patient W. W. This record is on the same patient as No. 2 and No. 3.

Record taken sixteen weeks after primary thrombosis. The heart has returned to normal rhythm but still shows inversion of the T wave in the first lead.

intensity as the weeks or months go by; or a sudden occlusion frequently due to thrombosis which may give a stormy group of symptoms or result in sudden death. The differentiation in two classes may possibly give us a better understanding, yet, at the same time it may be confusing because the two conditions are frequently manifestations of the same process.

Both coronary sclerosis and occlusion are more prevalent at the time of life in which generalized arteriosclerosis is most apparent, namely, after the fiftieth year, yet, occlusion may occur at all ages even in the very young.

If the obstruction in the coronary system is slight or comes on slowly so that defects are taken care of by the veins of Thebesius or arterial anastomosis, there may be no symptoms whatever and the condition is found at post mortem when death has occurred from causes other than cardiac disease. Even if there are moderate myocardial changes and resultant hypertrophy there may be few symptoms, provided there has not been too much effort strain on the heart. However, as the condition progresses the symptoms will become apparent and increase. There may be dyspnoea on exertion and frequently the first symptom is dull pain on walking fast or up a little hill. This pain may be substernal, or it may be in the shoulders, neck, arms or wrists.

When a patient presents himself, a very careful history should be taken, inquiring into heredity, habits, financial success, exercise, dyspnoea, pain, palpitation, heart distress or attacks of acute indigestion. We must remember that the history will bring out conditions which are not manifest even with the most rigid examination.

I agree with Paul White,[1] "that the cultivation of careful history taking is worth serious effort and should not be left to a secretary or assistant. It is better to rely on an assistant's physical examination than on his history taking if both cannot be accomplished by one's self." The history and examination must not be limited to the heart alone but must include the whole body.

The examination may show nothing abnormal, yet, if there is a considerable area of infarction there is apt to be rather much dilatation and later a compensative hypertrophy. If the condition has not been primarily hypertensive, we may find weak heart sounds and a low blood pressure, or we may find the signs such as occur in arterial sclerosis with hypertension.

We may have gallop rhythm and there may be functional mitral murmurs or aortic changes due to the sclerosis. We may find the more advanced signs of heart disease, marked dyspnoea, cyanosis, pulmonary edema, Cheyne Stokes' breathing, enlarged liver and subcutaneous edema.

The X-ray study will tell us about the conditions of the aorta as to whether it is tortuous or enlarged, and it is more accurate than percussion in giving the exact size of the heart. Frequently, it may surprise us by showing an aneurism or mediastinal tumor.

The electrocardiograph may show defects in the conduction system such as bundle branch block or auriculo-ventricular block. By the flattening or inversion of the T wave it indicates a distinct myocardial change. Occasionally certain heart defects may be brought out in no other way than with the use of the electrocardiograph. Yet, the electrocardiograph may be negative in serious heart disease and we must consider it as supplemental to the other methods of study.

The good sense and skill of the physician may be taxed to the utmost in determining whether a few vague symptoms come from organic trouble or are functional, possibly due to lack of exercise, or possibly due to tobacco or to the normal decreased capacity as we grow older. Cabot[2] says, "most diagnoses of

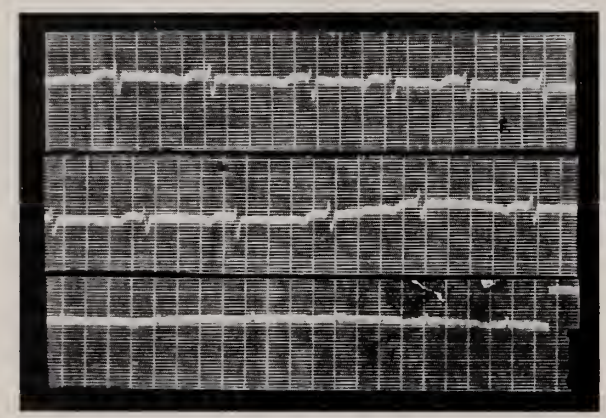

Fig. 5.—Record taken on woman age fifty admitted with typical attack of thrombosis. This record showed a markedly low voltage with fibrillation. She died suddenly eight days after the attack. Post mortem showed typical thrombosis.

heart disease, whether made by physicians or suspected by patients, are in my experience wrong. In such cases the heart is usually sound." However, it seems to me that in patients over fifty, when the diagnosis is doubtful, we too frequently find that there is present a true cardiac disease.

Coronary thrombosis, with the secondary myocardial changes has been known to the pathologist for a long time, yet, it is only within the last few years that clinicians have separated it from the anginal group and given it a definite clinical entity. The symptoms and course may be so typical that it is diagnosed frequently by the patient's physician even though he does not have access to the expensive apparatus for heart study.

Pathologically, the difference between thrombosis and narrowing of the coronary artery may be only one of rapidity and degree, yet the symptoms are very different. In narrowing the symptoms may come on only with exertion, while thrombosis very often comes on when the patient is at rest. Frequently it is fatal at once or it may run a mild course, but usually the onset is sudden and with terrific pain, dyspnoea and shock. The pain is intense, continuous and unbearable, lasting hours and even days. It is usually substernal and may radiate to the arms and neck and sometimes to the wrists. It may be in the upper abdomen and we may have grave doubts as to whether we are dealing with a serious abdominal condition. The shock is intense, but unlike surgical shock the patient is more uncomfortable if he attempts to lie down.

On examination the patient's face shows intense anguish and is covered with a cold sweat. The skin is ashy color, he is complaining greatly of pain and is extremely dyspnoeic. The pulse is weak, rapid, yet, may sometimes be slow and the blood pressure usually falls a great deal. If there has been a previous hypertension it may drop to normal. If it has previously been normal, it may drop to 60 or 70. The heart sounds are weak and distant especially at the apex and there may be systolic or diastolic murmurs. There may be moisture at the bases of both lungs. If the patient lives, the next day or so we may find a marked pericardial rub, and there is usually fever and an increased leucocyte count.

In occlusion the electrocardiogram may show most characteristic changes.

1. The T wave coming off high from the descending line of the R.

2. The peculiar V shaped R wave with the rounded S-T interval. This may occur in the first of the third lead, probably depending on

whether the damage is in the left or right coronary artery.

3. Low voltage.

4. Auriculo-ventricular block, bundle branch block, or other changes in the conduction system. These changes come on usually a month or so after the onset and may differ little from the change found in coronary sclerosis.

Fig. 6.—This shows a typical auriculo-ventricular block two to one rhythm in a man age 52.

Holland and Levine,[3] studying a large number of cases, show that the electrocardiogram changes from day to day. It may be normal the first few days and then gradually show typical changes and later appear normal again. A normal electrocardiogram does not exclude thrombosis, but it is only in a very small number of cases that changes are not shown at one time or another.

The prognosis is usually worse if the symptoms are very intense or prolonged. Even with the marked improvement of symptoms death may suddenly come a few days after the primary onset.

If the patient is seen in attack of coronary occlusion, the pain, dyspnoea and shock are frequently so great that by necessity we must give him relief. The nitrites will probably do harm, the milder sedatives will be of no value and large doses of morphia must be used to give this relief. The morphia must then be repeated along in sufficient amounts to relieve the pain which may last several hours to a day or so. Afterwards the patient should be made to rest possibly for several months and then the picture may differ little from that of coronary narrowing and both are the picture of a chronic myocardial insufficiency. Then the basal principle in the treatment of all myocardial insufficiency is the proper adaptation of the amount of exercise and work to the heart capacity.

Frequently the patient's mental condition is such that we have to beware of making a mental invalid, however, too frequently we are swayed by his impatience and importunity and permit him to overwork. Even his friends, zealous but unwise, will insist on his exercising to keep from getting weak.

Even when there is much cardiac embarrassment, it frequently happens that after proper rest and medication the patient is free from all symptoms. In spite of the advice that if they over-exert, they will meet disaster, after a few months of apparently good health, they almost invariably disregard this warning and have another cardiac break down.

When the heart patient is seen for the first

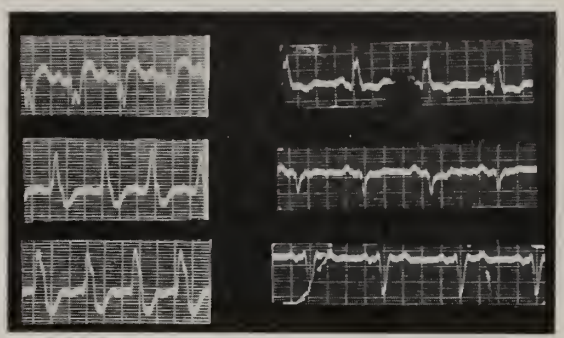

Fig. 7.—This record shows bundle branch block occurring in two patients, one in the left and one in the right coronary. This is shown by the wide QRS interval and slurring of the R wave.

time, if the symptoms are at all marked, it is better to have absolute rest, until the symptoms are all gone; during this time we have the opportunity to study him and then we can begin his exercise slowly and watch the effect. We may gradually allow the patient to work part time, if the work is light. As I have said before, the greatest judgment and tact are necessary when the patient feels good. If the heart patient is well directed he may get a life of happiness and do a fair amount of work. He is usually better with a little work or a little exercise, provided, it is properly regulated.

The proper use of certain drugs, especially digitalis, is of great value to the failing heart. We should avoid the things such as over-exertion that will give dyspnoea or pain. He should be studied in regard to habits that may be detrimental, such as over-eating, smoking too much, and not getting regular hours at night.

If the heart suggest syphilis or if there is a syphilitic history, or if the serum reaction is

positive in an older patient without heart symptoms, it is better to give very mild treatment, at first using the iodides and mercury, later changing to bismuth and the neo-arsphenamine.

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## THE USE OF DRUGS IN HEART DISEASE.*

WILLIAM B. PORTER, M. D., Richmond, Va.

Active therapy of heart disease is concerned with the use of methods and remedies which research and clinical experience have shown to be salutary in eradicating infectious and toxic agents active in the production of tissue changes in the cardiovascular systems; and with the administration of pharmacologic substances to adjust pathologic physiology resulting from the progression of intrinsic cardiovascular disease or induced by complicating extrinsic factors.

While consideration of the indications for, method of use, and choice of remedies primarily designed for their specific action in modifying or eradicating the various etiological agents operating in the production of heart disease is beyond the scope of our particular discussion, yet it is keenly appreciated that this aspect of the subject is concerned with many phases of specialized therapy of the greatest possible importance to a satisfactory termination of illness induced by an affection of the heart. Obviously it is impossible to cover the entire field and it has been deemed desirable to limit this discussion to a consideration of congestive heart failure, for this is the most common condition affecting those patients who consult a physician demanding therapeutic control of symptoms induced by heart disease. The subject can be approached in a fairly well standardized fashion for the problem is basically the same regardless of the intrinsic or extrinsic factors which have induced the departure from normal physiology, but the duration and the severity of congestive failure influence the intensity of symptoms, the time-length of illness, and the end results of therapy.

One must be increasingly impressed with the necessity for an accurate conception of the problems concerned in the therapy of chronic diseases. Much time and effort are consumed in an attempt to tag diseases with a name, yet a clear conception of the pathologic-physiology existing in the somatic systems of the patient having a given malady indicates the only true scheme for a therapeutic approach. If remedies are chosen which should modify these departures from normal and the physiologic action of these remedies is secured by the use of proper dosage, relief of much distress will result and the prognosis in heart disease will be more hopeful.

Congestive heart failure is due to inadequacy of the myocardium, which induces unsatisfactory circulation resulting in stasis in various parts of the body. Venous pressure is increased which in turn induces increased rate of transudation of fluid and crystaloids through the capillary wall and decreased rate of reabsorption of these substances into the venous circulation. If this state continues, clinical edema results together with dyspnea, cyanosis, cough and diminished urinary excretion. It must constantly be borne in mind that the inception of congestive heart failure means muscle fatigue with the abnormal chemical state which exists in an exhausted muscle, and that this has been induced either by an excessive and prolonged strain of a normal heart muscle, or by less excessive strain of a diseased myocardium. In either event the fundamental state of fatigue terminating in functional inadequacy is the important truth which must form the basis of all sane therapy.

The fundamental principle of rest is accepted as the most important measure in the relief of congestive failure, for there is no drug which will substitute for the necessary amount of physiological rest. Whether this rest is to be merely a limitation of accustomed activities or absolute confinement in a semi-recumbent posture in a chair or bed depends upon the degree of failure and urgency of the problem.

The drug therapy of congestive failure concerns itself primarily with a consideration of the method of administration and the effects of digitalis on the heart and circulation.

*From the Department of Medicine, Medical College of Virginia, Richmond, Va.

Read as part of the symposium on Diseases of the Heart at the sixty-third annual session of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

Remedies to induce rest and those designed to aid in the relief of edema are useful and important, but they must be classed as of secondary importance to the sane and efficient use of foxglove. Some years ago reliable preparations of digitalis were expensive and not universally obtainable, but that is not true today, and good and reliable digitalis, which is reasonably priced, can be had anywhere. Much confusion about the use of digitalis has existed in the past, due no doubt to an uncertainty in the minds of physicians as to what effect digitalis had on the heart when it had failed under strain, either from valve defects, increased peripheral resistance of hypertension, myocardial fibrosis from diffuse coronary disease, or a combination of all of these. The physiological action of digitalis important in the treatment of heart disease is concerned only with its effect on the myocardium. Its first effect is depression of the pace-making function of the sinoauricular node which results in a slowing of the heart rate when a normal cardiac mechanism exists. This effect is noted in the normal and pathological heart, while the degree of this effect is quite variable in different individuals. Secondly, digitalis affects cardiac contraction. In some manner not yet understood, the tone of the heart muscle and the completeness of contraction when there is dilatation and failure are much increased by the drug. These effects in man are at times most impressive, yet there are those who continue to teach that digitalis is indicated only when congestive failure exists with auricular fibrillation or flutter. The third effect is on conduction. This occurs throughout the heart muscle, but the most important and marked influence is on the main conducting tract bundle (His) and node (of Tawara). This effect of digitalis is most important, for it is this action which reduces ventricular rate by interposing a block between the auricle and ventricle when the latter is being rapidly and arrhythmically excited by a fibrillating auricle.

Admitting the existence of the indications for digitalis, one admits the necessity of digitalization which consists in the saturation slow or fast of the patient's system with the drug until full therapeutic effect on the heart is secured or until toxic symptoms develop. The dosage can be only roughly gauged, for there is considerable variation in the susceptibility of different individuals, and while the size and weight of the patient is the most reliable index, one cannot make a hard and fast rule for accurate quantities. 0.1 gram (1½ grains) of the powdered leaf or 1 c.c. of the tincture per ten pounds of body weight plus 0.1 gram for each additional day required to introduce the total dosage is a useful guide. After full physiological effects have been obtained, 0.1 gram (1½ grains) per day is usually satisfactory as a maintenance dose. The continuation of this dosage enables a patient to remain active and comfortable and certainly lessens the liability of a return of active failure. If digitalis is accurately given in sufficient dosage to patients in whom it is therapeutically indicated, satisfactory results are obtained in a high percentage of patients. Oral administration is the method of choice in 95 per cent of all patients, and, unless vomiting prevents a retention of the drug, one may not expect superior results from hypodermic methods. Vomiting usually means that the patient has a sufficient amount of digitalis or that intense venous stasis exists in the gastro-intestinal tract. In the latter event the situation is an acute one and the intravenous administration of 60 per cent of the calculated dose of a reliable tincture is indicated. At times one is confronted with such urgent symptoms due to the rapid inception of congestive failure that death may supervene before the effects of digitalis can be expected. Confronted with this emergency, prompt relief may be obtained from venesection, removing from 350 to 500 c.c. of blood. The phenomenon indicating high venous pressure is the only accurate guide in choosing this procedure and not the existence or non-existence of arterial hypertension. Frequently after digitalis has been given a patient and symptoms are not relieved, a change of the preparation or a resort to a new method of administration is adopted. I suggest that the more sane attitude would be to first re-evaluate the diagnosis and to critically question the wisdom or justification for the administration of the drug in the first instance; and then accurately determine whether the drug has been given in sufficient amounts. The explanation for failure may be that the disease processes which have induced failure are advanced to such a degree that recovery is not possible, but more frequently the indications for digitalis did not exist or the amount administered has been inadequate. If after a patient has been digitalized, together with a reasonable restriction of fluid and salt, there remains clinical

edema, the following regime is followed: Theobromin calcium salicylate or throbromin sodium salicylate is given 4 grams (60 grains) divided into three doses, administered every other day for eight to ten days. If this does not effectively remove the edema, urea in large doses, 30 to 60 grams per day, administered in three doses in lemonade is given for at least a week before resorting to any other method. This usually results in excessive diuresis in all patients who have persistent edema due to congestive heart failure. We have been greatly impressed with the usefulness of this substance, which is apparently not in common use. The diuretics represented by salyrgan is reserved for those patients who remain resistant to all other procedures, and especially those patients who are relieved of the postural edema by the above named methods, but who continue to have recurrent ascites. The drug is used intravenously, beginning with 0.5 c.c. once a day, increasing the amount to 2 c.c. in four days. The method is preceded by the administration of ammonium chloride 8 grams (240 grains) for two days prior to the use of salyrgan, and one week should elapse between a series of injections, to evade the possibility of mercury poisoning. The substance is a very useful remedy in selected patients, but there exists potential danger from its use which must not be ignored.

Any discussion of the therapy of heart disease would be incomplete unless one commented upon the effects of digitalis upon arterial tension. Variations in mean blood pressure depend not so much on changes in the minute volume of blood circulating in the arterial tree, but on the caliber of that immense arteriolar and capillary bed which is controlled by the vasomotor nervous system. The minute volume of circulating blood may vary as much as 300 per cent, yet mean arterial pressure remain constant provided the vasomotor control of peripheral resistance is retained. Simple illustrations are to be found in the reaction of the circulation in exercise and severe anemias, when the minute volume of blood may be increased tremendously, yet arterial pressure may actually be reduced. There is nothing in the clinical action of digitalis to suggest that it will modify significantly arterial blood pressure. It will be found that in the large majority of instances when heart failure of the congestive type co-exists with hypertension the relief of the venous stasis will induce substantial reduction in the arterial tension. Furthermore, one can find no justification for the continued use of digitalis in those states characterized by hypotension and tachycardia in the absence of elevated venous pressure and diminution of the rate of blood flow. Even if digitalis would increase the force of ventricular contraction and reduce the heart rate in sepsis and shock, it is doubtful whether the patient's condition would be improved, unless at the same time an increase of vascular tone could be had. The problem here is one not concerned primarily with an inadequacy of the myocardium, but probably with reduced ventricular filling, a condition quite unlike congestive failure. This aspect of the subject is concerned with the use of digitalis in the acute infections, particularly pneumonia. It is interesting to note that its use in pneumonia in large and well controlled groups of patients of all ages shows that it actually increases instead of decreases the mortality rate in this disease. All available facts pertaining to the physiological action of digitalis indicate that these results are axiomatic.

It is apparent to even the casual observer that the mortality rate in pneumonia will be reduced not by therapeutic effort directed at the circulatory disturbance induced by the toxemia of the disease, but by methods combating the bacteremia and septicemia.

In closing this symposium, it is fitting to note that the therapeutic results obtained in organic heart disease justify conservative optimism on the part of physicians. The sane use of this psychological approach augments greatly all drug therapy.

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### Discussion

Dr. Manfred Call, *Richmond:* Dr. Randolph and I agreed to divide this discussion, I to take the first two papers and he the last two. So I shall devote myself more specifically to Dr. Wood's and Dr. Martin's papers.

In a pre-sessional review of the papers read, several observations and deductions drawn therefrom may be of interest if we are to utilize for our mental enrich-

ment and practical application the material collected and condensed by the four essayists.

(1). The first and fourth papers in the series were of a more general scope than the second and third, which developed specific phases of the general subject.

(2). None of the papers were encyclopedic (certainly a boon to the audience), but each contained an array of facts and correlations so interesting as to justify (after their publication) the careful individual study of each paper, with the necessary collateral reading, by each member of this Society who is practicing medicine, and they should furnish interesting discussion for local groups or societies.

I feel that this symposium may be appropriately called "A guide to further study for a comprehensive understanding of heart disease, its causation, prevention, and treatment."

Speaking specifically on Dr. Wood's paper, his remarks on etiology need no amplification. In that division dealing with prevention, implications suggested in the context may be more specifically expressed. He speaks of the control of basic conditions leading to heart disease and specifically of heredity, focal infection, high-protein diet, tobacco, pregnancy, and obesity in their relationship to hypertensive and arteriosclerotic cases, and in the second phase, the relief and prevention of heart failure. Modification of the effect of uncontrollable factors is implied, but after these factors have produced disease much may be done before the onset of heart failure.

As Dr. Martin stated, given the presence of certain known causative factors, we are justified in the presumption that heart damage will result; and the prompt institution of active measures may materially limit or modify a pathological process that otherwise might tend to be more extensive. I believe that careful clinical observation will disclose in certain patients definite tendencies to hypertonic vascular states that may be looked upon as presclerotic conditions, amenable to treatment. I have seen this more frequently, perhaps, in well kept records of the pregnant state, and these particular cases have emphasized the necessity for an association of heart, blood-vessels and kidneys in a mechanism that must be studied as a whole in all conditions leading to hypertensive disease.

It might be of interest here to call attention to the rather intensive study of the pregnant state which is now being conducted by Dr. Lapham under the auspices of this Society. The records of the pregnant state to which I have reference are those I have had the pleasuse of seeing with Dr. Gray, starting with the third or fourth week of pregnancy and continuing to the end. Many show presclerotic conditions, continuing through the pregnancy. I believe if we will make a careful study, practically all presclerotic conditions can be recognized and permanent damage prevented.

There is another type of case, perhaps, that requires special mention, and that is the child who, by the nonrecognition of a rheumatic carditis, comes with a heart permanently crippled by pericardial, myocardial, and endocardial change, and who will perhaps die at puberty, largely because he had no medical supervision during his time of greatest need, or because the constant strict supervision suggested by Dr. Martin was not carried out. I think it is undoubtedly true that, if a child's heart is affected as a part of the rheumatic affection, and if he does not have the benefit of prolonged rest in bed and proper medical supervision, the reserve power of the heart that is permanently lost will be out of proportion to the valve condition that has resulted from the infection he had at first, and that as a result of loss of this reserve power his days are undoubtedly shortened.

Dr. Martin's paper is depressing in that two of the three types of endocarditis he pictures are fatal, while the third (rheumatic), rarely produces an early cardiac death. Yet in Virginia, with 65.7 per cent of 300 heart cases due to rheumatism, there is an incidence of 3.9 cases of subacute bacterial endocarditis. Now, with 1.3 per cent of subacute bacterial endocarditis, most of which are grafts on a previous rheumatic condition, that would give us around 4 to 5 per cent of original rheumatic fever, which I think is very striking.

The only addition I can make to Dr. Martin's paper is to describe the principles of a treatment for rheumatic fever, with a view to preventing valvular lesions, carried out by Caton, of Edinboro, and indorsed by Osler. It emphasizes the necessity for rest and the good results that may ensue, and it gave me an understanding of what rest is that I never had had before. Dr. Barber, of Richmond, had been abroad and brought back a monograph by Caton. He puts the patient to bed—between blankets—and pushes salicylates and alkalies, limiting him to a milk diet and water. Probably that would be modified now, as we know more of vitamins. The heart is examined every day for the sounds at the apex and base and the transverse diameter. Should any modification take place, the patient is put in absolute rest, is not allowed to turn over in bed but is lifted by a nurse; he is lifted up to be put on the bedpan; he is not allowed to hold a tube in his hand to take nourishment. This is continued until a transverse diameter that has increased returns to normal, or until a murmur that has appeared may disappear or be modified. Even then the patient is not allowed to sit up until the effect of exercise on the heart rate, its size, and its sounds, is determined by experiment.

I have kept patients in bed as long as six months after temperature has disappeared; and today, when you examine them, you can not get by physical examination evidence of a chronic valvular lesion.

Dr. B. M. Randolph, *Charlottesville:* It is obviously impossible to give a worthy discussion of this extensive and admirable symposium in the time allotted to us, but as the papers were read there were a few points that I noted.

I should like to suggest to Dr. Wood the possibility that the difference between the cardiac statistics of syphilitic heart disease in Texas and New England may be not altogether due to race (he seemed to infer that), but that the more thorough recognition and treatment of early syphilis that prevail in New England may have something to do with such statistics.

I want to thank Dr. Martin for pointing out that the prognosis of bacterial endocarditis is the prognosis of the sepsis of the organism engaged, and not of the particular state itself; and I want to warmly indorse what Dr. Lawson said about the history. He hit the fundamental point in prevention of the rotation of patients among specialists, of which the public complains to such a great extent.

I was very much impressed that Dr. Porter saw fit to make mention of only one drug. Beyond that, I do not think his paper can be improved upon.

I shall confine what I have to say to a word or name that I did not hear mentioned in the whole discussion—angina—and particularly to what we mean by this term.

The Greek word from which *angina* is derived means to *strangle*. Originally its use was confined to affections of the throat associated with regional pain, choking, or difficulty in swallowing. In the older literature we find the terms *angina tonsillaris, angina trachealis, angina parotides* (mumps), *angina maligna* (diphtheria).

In Heberden's classic description of the disease

which we today call true angina pectoris, the condition received this name. Parry later calls the same malady *syncope anginosa*. During the last hundred years the use of the word in its original sense of *choking* has disappeared, and it has come to mean spasmodic myocardial pain. Varying stages of pathology and degrees of symptoms have made a precise meaning difficult to ascertain, and in actual medical language such words as *pseudo-angina* and *anginoid* have been coined to supply a more elastic nomenclature for myocardial pain.

Pathologically, the disease of the heart muscle and coronary vessels, of which true angina might be called the terminal phase, has long been understood. Hooper's Medical Dictionary (1834) states: "It mostly depends upon an ossification of the coronary arteries, and then we can never expect a radical cure." Except in a more exact understanding of the pathological changes of vascular disease, and of the associated changes in the myocardium, there has been but little added to the knowledge of the pathological anatomy. And when we come to the consideration of the nature and the manner of the production of the pain, the state of our knowledge is very unsatisfactory. Many theories have been advanced, accompanied by much argument, but without proof. Heberden considered the pain as due to spasm of cardiac muscle. Huchard collected as many as eighty theories of the manner of its production, and there have been others since. At the present time, the prevailing opinion seems to be that the pain is the result of spasmodic contraction of the coronary arteries, or of the ischemia resulting from such contraction. Elaborate discussions are to be found in the literature, arguing mostly from analogy of vascular conditions observed in other regions of the body, but all failing to furnish actual demonstration of the truth of any hypothesis. To my mind, there are very definite reasons for not accepting the current theories:

1. The pain of so-called pseudo-angina is not accounted for. Here, as usual, the old alibi of applying the terms "neurotic" and "hysterical" to patients who suffer from unexplained symptoms is well to the front. It is not satisfactory to brush away in such a fashion a symptom which differs only in degree, merely because the type of patient, the history, and the prognosis are different.

2. Degenerative disease of the coronary arteries is by no means uncommon in women, while angina pectoris is extremely rare.

3. It is very common for patients to die of the effects of coronary arteriosclerosis without ever having pain, either before or during the terminal illness.

4. Cases with a history of typical angina pectoris may die without pain in the terminal illness.

5. There have been rare, but well authenticated cases of true angina pectoris, which have had an intercurrent attack of dilatation of the heart, and which have thereafter been free from anginal attacks, which beforehand always occurred with any exertion.

6. When the pain is controlled, the patient still dies.

I am disposed to think that Heberden was right in regarding the pain as a phenomenon of muscular contraction, but rather of separate bundles or groups than of an entire chamber; that the pain of angina pectoris, mild and severe, and of pseudo-angina are alike in character; that they are analogous to the pain of pylorospasm and intestinal colic; that they may arise from any interruption of the orderly, rhythmic flow of the myocardial contractile wave, which may arise either from anatomical conditions within the heart or from reflex impulses from without.

Dr. W. A. Plecker, State Department of Health, *Richmond:* We are all interested in heart disease, because it is the most frequent cause of death. We are interested, also, because it is one of the diseases causing an increasing number of deaths. That, we believe, is due largely to the fact that deaths of infants and young people are being prevented, and that we now have more persons in the age class beyond fifty, during which period they are more susceptible to death from heart disease. There is, therefore, some doubt as to whether the number of deaths from heart disease is really increasing, or whether the increase is only apparent.

What I want to speak of now, however, is the difficulty which statisticians have in securing accurate statistics, and of the difficulties that our office, the Bureau of Vital Statistics, has. There are few, if any, causes that give us more trouble to properly classify than heart disease. That term seems to be the dumping ground for all uncertain deaths, and if the diagnosis has not been accurately and carefully made, the death may be very well assigned to heart disease, or to organic heart disease, and will pass unquestioned in our office. I want to speak of one of the chief difficulties which we have, and that is the assigning of deaths to functional affections of the heart. The use of these terms appears to go in cycles. A perfectly good term which has been discussed here in an excellent manner is coronary disease. We notice that the term coronary occlusion has come into use in the last two or three years; very few cases were so classified prior to several years ago. I take it to be a fact that coronary artery diseases are being now more fully discussed, and that the men are becoming more accurate in their diagnosis, and I expect that after this meeting some others who have not been using these terms (or not using them accurately) will begin. We notice that after such a meeting as this.

The point I want to speak of is the use of wrong terms that are simply functional. "Congestive heart failure" is the one that seems to be going the rounds now among the interns in the hospitals. The question that arises in my mind is whether we have a teacher in one of our schools who is using that term. From the highest schools right on down to the almshouses, the interns are writing "congestive heart failure" on death certificates. What they mean by that we have never been able to discover, as nearly every doctor queried seems to have a different conception of the term, and it causes us to write many letters.

Another term is "heart failure," which, of course, means nothing. We all die of heart failure; it is a terminal condition and the term should not be used. "Cardiac asthenia" and "cardiac weakness" are other terms which we regard as cloaks to conceal ignorance. What I am asking for today is more accurate terminology in heart disease. If you know that the valves are involved, give that; if not, then "organic heart disease" or "heart disease" will go, but please do not talk about "heart failure." The word "angina" should never be employed alone. There are some forty descriptive terms which may be used in connection with it, such as agranulocytic, Ludwig's, Vincent's, and particularly angina pectoris, included in the present discussion. These are the things that make our statistics inaccurate.

When men discuss statistics and quote them, I listen with fear and trembling, because I know how often these statistics are inaccurate, simply because we cannot get correct information from the men in the field.

Dr. Wood, closing the discussion on his part: Dr. Call is correct and helpful in his interpretation of my figures. Very fortunately bacterial endocarditis seems to be infrequent in Virginia.

I can not agree with Dr. Plecker. No doubt it

is important to have the death certificates conform to the old terminology, but one can hardly blame the interns of today for the use of so accurate and highly descriptive a term as "congestive heart failure."

Dr. Martin, closing the discussion on his part: I want to add one word about the management of these cases of subacute bacterial endocarditis. They constitute one of the most distressing situations that we have to meet. These unfortunate patients live for many months, sometimes even for years. The ultimate fatal outcome is almost inevitable, although there are occasional cases that do recover. To tell the family of such a patient that he is going to die six months hence, or twelve months hence, and have that burden of hopelessness lying upon them all the time is, I think, a very cruel thing to do, though we may be tempted to do so to establish our reputation for accurate prognosis. The humane thing is to tell them that the patient has chronic progressive infection of the heart; that it is of a very serious nature, but that some of these cases recover and we hope this will be such a case. We should support them with whatever hope it is possible to give.

I also want to say a word about Dr. Plecker's suggestion. It is just as inaccurate to say that a patient dies of mitral stenosis as to say he dies of heart failure. He may die as the result of mitral stenosis, but that does not throw any light on the terminal event. I think it might be well to formulate a definition of types of deaths occurring in heart disease and to publish it among the physicians of the state, so that accurate statistics may be obtained.

Dr. Porter, closing the discussion on his part: Since I am the only person who has used the term "congestive heart failure," and am at the same time a teacher of medicine, it is incumbent upon me to define this term and to explain its usefulness. For many years it has been recognized that the terminology used in heart disease was inadequate, for the reason that it carried with it no suggestions as to the true clinical condition of the patient. To illustrate this, a diagnosis of mitral stenosis does not indicate whether the patient is moribund, or is capable of carrying on in a usual and normal fashion. If, on the other hand, the diagnosis were as follows, namely, rheumatic heart disease, mitral stenosis, auricular fibrillation and congestive heart failure, one can visualize the clinical condition of the patient and have in his possession that data necessary for sane therapy. My feeling is that the term "congestive heart failure" is a most useful one. It is a departure from normal circulatory physiology which is responsible for the admission of 80 per cent of all patients who seek medical treatment for the relief of disability induced by heart disease.

Dr. Plecker: The terms that have just been stated are no doubt very good, but the ones we have to use in our office are those prescribed by the Bureau of the Census. "Congestive heart failure" does not go back to the cause of the failure. We do not classify deaths by the terminal symptoms at all, but go back to the causes which led up to them. Take bronchopneumonia; that is a very striking illustration. In children between the ages of six months and ten years it is very often the result of measles or whooping cough or something of that sort, and we have to question every death for which that is returned as the cause, between these ages, if no statement is made as to whether it follows any other disease.

That bears out the statement I made, that we want to go back to the organic disease of the heart rather than to the terminal symptoms.

## BLASTOMYCOSIS WITH REPORT OF THREE CASES

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and
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Blastomycosis is still considered a medical curiosity by a large percentage of our profession. The idea that it is a tropical infection, occurring so rarely in our section of the country as to deserve only casual interest, is still prevalent. It is with the hope of stimulating further interest in this not infrequent disease that we are reporting three of our own cases and the methods of therapy employed.

Gilchrist in 1894 was apparently the first to demonstrate the causative organisms. He observed these in a supposed case of scrofuloderma but did not at this time recognize the true nature of the parasites he had found. Since that time many cases have been reported, nearly all these being in the white race. The disease in the colored race is extremely rare but one of the three cases herein reported was that of a colored man. The condition is not as uncommon as many believe; however, the disease is not frequently seen by the physician in general practice and, when seen, usually is not diagnosed until after consultation with a dermatologist.

Etiology: Blastomycosis is a chronic, slowly progressive, infectious disorder, due to vegetable parasites known as blastomyces. The organisms are classed with the yeasts and are rather prevalent in nature where other fungi and molds are found, as in various types of vegetation. The parasites are round, encapsulated, highly refractile organisms with a double contoured wall and usually a granular protoplasm. They vary in dimensions from that of a red blood cell to three times this size. Blastomyces can usually be found in the smears of the exudate from a lesion after this material has been treated with 10 to 30 per cent sodium hydroxide from 10 to 30 minutes, but study of several preparations may be necessary before finding them. In all suspected cases a biopsy should supplement microscopic studies of the pus, as the organisms can usually be demonstrated in the tissue sections. The diagnosis is then confirmed and at the same time it has been possible to eliminate the possibility of some other lesion, such as carcinoma of the skin, because as we shall see later, this

is one pathological entity which may be confused with blastomycetic dermatitis.

Symptoms: Little is known of the predisposing causes of the infection and any tissue of the body may be involved, but in the great majority of cases the disease begins on some exposed surface of the skin, the hands and face being common sites, though any part of the cutaneous surface may be affected. The condition is more common in men than in women, supposedly due to the fact that men are ordinarily more exposed to trauma and the infectious agents which usually enter the body through skin abrasions. The primary lesion on the skin nearly always consists of a small papule or papulopustule. These usually increase in number and spread peripherally, and frequently the area involved is several centimeters in diameter before medical aid is sought. The true nature of the process is often obscured by various remedies which have been applied by the patient in an effort to effect a cure. Crusting is always present unless some form of treatment has been instituted, and when the crusts are removed the underlying lesion is sharply demarked, has a granulomatous surface with elevated edges, and appears to be more active at the periphery where the more recent skin involvement is seen to consist of small bluish or reddish papules or minute abscesses immediately in the skin. Not infrequently healing tends to occur centrally leaving a thin atrophic scar. Occasionally, just as in one of the patients we will report, a chronic carbunculoid abscess will develop in the deeper tissues. Usually there is little pain but, when the deeper structures are involved, pain may be rather intense.

Systemic blastomycosis is not infrequent and in most patients is secondary to a cutaneous form of the disease, but cases with systemic infections have been reported in which there was no evidence of invasion of the skin by the parasites. Exclusive of the skin, the lungs are more frequently involved than any other tissue of the body. According to various statistics, bone infection is probably third in the relative order of the frequency of various tissue involvement. Pulmonary or osseous infection usually gives roentgenographic evidence of its presence but sputum examinations and biopsies from the affected bone may be necessary before a final diagnosis is made. A productive cough with pulmonary infection and pain accompanying a bone lesion, along with some temperature and leukocytosis, all of which tend to run a chronic course, impel the physician to make further investigations which usually lead to the correct diagnosis.

Differential Diagnosis: Cutaneous blastomycosis must be differentiated from sporotrichosis, the vegetating type of cutaneous syphilis, tuberculosis of the skin, carcinoma and drug eruptions, especially those caused by bromides or iodides. Sporotrichosis primarily involves the subcutaneous tissues forming subcutaneous abscesses, the epidermis being involved only rarely. Cutaneous vegetating syphilides most often occur near mucous membranes or moist surfaces and other manifestations of syphilis are usually present. A positive blood Wassermann is of value but it must not be forgotten that a patient with syphilis may also have blastomycosis. Cutaneous tuberculosis progresses more slowly and the typical apple-butter nodules are ordinarily present at the periphery of the lesion. Skin carcinoma presents a firm, rather smooth, elevated and rolled margin and the minute, multiple discrete abscesses seen in blastomycosis are usually absent. Drug eruptions, usually, but not always, are more generalized and the patient will give a history which should avoid confusion and, finally, as stated above, the demonstration of the parasites in the exudate and tissues from a suspected case of blastomycosis is conclusive when found by a competent pathologist.

## Case Reports

Case C14,261.—Referred by Dr. W. A. Reese, of Petersburg, Va. A white married woman, 27 years of age, first noticed a small bluish abrasion on the lateral aspect of the right leg eight months prior to the time she was referred to us for treatment. This lesion gradually increased in size by peripheral extension until it covered most of the lower third of the lateral aspect of the leg. (Fig. 1.) During the interim she had used various ointments and wet magnesium sulphate dressings without improvement. Symptoms have been rather mild until recently when pain, particularly about the deep-seated lesion on the back of the leg, became rather severe.

Ten years ago the blood of this patient was Wassermann positive on several occasions. Since that time she has received anti-luetic treatment at intervals, several injections of

neoarsphenamine having been given since the onset of her present illness, but without any alleviation of her symptoms. At the time of this writing she has been under treatment one month. She is now taking potassium iodide in ascending doses. Two roentgen ray treatments have been given and she shows marked improvement. We do not of course expect to cure such an extensive lesion in so short a time.

Fig. 1.—A large lesion typical of blastomycetic dermatitis with several smaller more recent lesions about it. The arrow indicates a deep carbunculoid lesion on the back of the leg.

Case C9138.—Referred by Dr. J. Bolling Jones, of Petersburg, Va. A colored man, age 35, gave a history of having noticed a small papule on the right side of his neck two years prior to the time he was referred to us. The disease spread peripherally and five months later involved the left cervical region. Extension continued and, when first seen in our office, he presented a symmetrical, granulomatous lesion, involving both sides of the neck and covered by a brown crust. (Fig. 2-A.)

A section of tissue removed at the time of his first visit was reported by a good pathologist as a squamous cell epithelioma, superimposed on a tubercular dermatitis, which illustrates the difficulty of diagnosis in these cases. Another section from this same case was reported by a different pathologist as blastomycosis and the organisms were found at this time in the tissue.

X-ray therapy was immediately instituted and in a period of three months six treatments were given with marked improvement. (Fig. 2-B.)

Due to his financial condition he found it impossible to pay for his transportation to and from our office and therefore he was referred to a government hospital for further treatment and was reported entirely well after several applications of carbon dioxide snow.

We dare not contend that the results ob-

Fig. 2.—A. The granulomatous lesion on the right side of the neck showing a border with sharp demarcation is quite characteristic of blastomycosis. An arrow indicates the edge of the lesion on the left side of the neck.

Fig. 2.—B. After six roentgen treatments there is marked regression. The central whitish appearance represents a marked degree of scar tissue formation. No iodide or other medication was employed to obtain the above result.

tained in this case were due to our own efforts, but since marked improvement was noted after six roentgen treatments, and knowing that the effects of roentgen therapy are often delayed for a considerable time, we cannot avoid thinking that possibly the results were, at least in part, derived from our own efforts.

Case C13,313.—Referred by Drs. Tredway and Neal, Emporia, Va. A white man, age 43, noticed a small nodule on the under surface of the right side of his chin five months preceding the time he was first seen by us. The lesion progressed and soon became an ulcer with a granulomatous surface covered by a brown crust. When referred to us the lesion was about five centimeters in diameter. (Fig. 3-A.)

Fig. 3.—A. The lesion with well defined borders, the whole covered with a brownish crust, has an appearance rather typical of blastomycosis.

Fig. 3.—B. Two months after first X-ray treatment. Only three treatments were given, and no iodides. The endotherm was used only to help remove the crusts and hair from the surface of the lesion.

At this time he was treated with X-ray and a section of tissue removed for biopsy. In this section blastomyces were found by the pathologist. Following this the patient was given two other doses of roentgen ray at weekly intervals. Two weeks later the granulomatous surface was removed with the endotherm only for the purpose of destroying the superficial diseased tissue. He was seen at weekly intervals following this treatment and one month later was entirely well.

Treatment: Various therapeutic measures have been advocated for the treatment of blastomycosis, but the best results in most of the reported cases seem to have followed the administration internally of massive doses of potassium iodide supplemented by roentgen therapy to the local lesion. We recommend that iodide therapy begin with relatively small doses; about 15 minims of a saturated solution of potassium iodide three times daily, this dose to be increased about three minims daily until the limit of tolerance is reached. Adults can frequently take as much as 300 to 500 minims daily without toxic manifestations. The amount of radiation and the frequency with which it is given varies according to the judgment of different radiologists. In two of our cases roentgen therapy was employed alone in an effort to evaluate the efficacy of this agent. Both of these patients were entirely well after a relatively short time.

Other therapeutic measures have been advocated, but these have afforded less gratifying results. Complete excision of the diseased tissue has been practiced in some cases with success. Electrocoagulation and freezing with carbon dioxide snow have been used to advantage in a few patients. Some men have reported good results following the use of arsphenamine intravenously, but this was used in one of our cases on the basis of her luetic condition, without any improvement. Iodine, gentian violet and acriflavine, locally, and copper sulphate both locally and internally, have also been suggested but none of these methods have been found to be as valuable as the com-

bination of potassium iodide and X-ray; however, it would seem wise to resort to one or more of these procedures should any individual case prove resistant to iodides and radiation.

Systemic blastomycosis presents a much more serious problem, both as to prognosis and therapy, because nearly all of these cases terminate fatally in spite of all efforts at treatment. In the care of such cases the institution of massive doses of iodides as described above, along with deep X-ray therapy, would seem to be the method of choice. In certain clinics gentian violet in doses of .15 to .3 gm. in the strength of .5 per cent in normal saline, administered intravenously, has apparently given good results in certain cases. This has also been used to supplement treatment with iodides and X-ray but the cases treated in this manner have been too few to warrant definite conclusions.


### Summary

1. Blastomycosis is more frequent than we ordinarily suppose.

2. Three cases of the cutaneous infection are reported.

3. The treatment of choice is potassium iodide internally and roentgen therapy locally.

4. Our experience with these cases indicates that the cutaneous lesions may be cured by roentgen therapy alone.

5. Nearly all cases with skin involvement alone respond readily to treatment. Systemic infection is eventually fatal in nearly 100 per cent of the cases.


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*Medical Arts Building.*

## VARICOSE VEINS AND THEIR TREATMENT.*

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In considering the etiology of varicose veins there are various theories advanced, none of which explains their development in all cases. The most ancient and honored is that of back pressure, developing as a result of insufficiency of the valves of the iliac vein gradually progressing from above downward, dilating the vein and separating the valves as the unsupported column of blood increases. If the occupation of the individual is such that there is frequent increase in intra-abdominal pressure, such as lifting, etc., dilatation becomes more extreme and progresses more rapidly. This theory, however, does not explain varices developing at or below the knee without apparent involvement of the saphenous vein above the knee.

I will not attempt to settle the theories advanced as the etiological factors in the production of varicose veins. It would be well, however, to tabulate them so that we may be able to get a clear idea of the various causes. First: back pressure. Second: congenital insufficiency of the valves. Third: syphilis has been considered the chief cause by some authorities. Fourth: infection, which may be embolic or hematogenous, or may be by direct extension from the surrounding structures, causing the development of a low grade phlebitis. Fifth: endocrines have also been held responsible for their development. From my observation, there is a marked predisposition to their development as a result of heredity.

None of these theories explain all cases of varicose veins, and there is probably some truth in all. The truth probably lies in two or more factors entering into the etiology in each individual case.

Types of varicose veins as classified by Berntsen are: Type 1: isolated saccular varix along the course of the great saphenous vein; Type 2: the fully developed tortuous mass of varices along either of the saphenous veins; Type 3: the uniform dilatation of the larger trunk; Type 4; venous bursts, usually stellate and very superficial.

Before considering the treatment of any case of varicose veins we must assure ourselves, as far as possible, that the symptoms complained of are due to the varices and that relief may

*Read at the meeting of the Southwestern Virginia Medical Society, in Roanoke, Va., September, 1932.

be expected by proper treatment. Varicose veins secondary to pelvic tumors should not be treated until the apparent cause has been removed. Flat feet frequently are responsible for aches and pains in the calves of the legs, which are frequently attributed by the patient to varicose veins. Treatment of the veins, together with that of the feet, will often give great relief. At times, though infrequently, Buerger's and Raynaud's disease coexist with varicose veins. These must be definitely excluded. Often a patient with arthritic changes attributes the pain to existing varicose veins, and the prognosis as to relief must be guarded. Rheumatic or neuritic pains should be differentiated from that due to varicose veins. Compensatory enlargement of superficial veins occurs as a result of thrombophlebitis blocking the deep veins. This is, of course, a positive counter indication for treatment.

Testing of the patency of the deep veins is best done by the Trendelenberg test and Perthes' test. The chief counter indications for treatment of varicose veins are: first, a chronic deep thrombophlebitis, whether recent or comparatively ancient, giving a history of swelling of the lower extremities following childbirth, pelvic infection, operation, or typhoid fever; second, of course any acute phlebitis; third, arteriosclerosis is regarded by some as a counter indication; fourth, diabetes. Any patient with either of the latter two conditions should be carefully studied before considering treatment.

As to the method of treatment to be adopted, until 1926, surgical treatment was very much in vogue. Ninety per cent of varicose veins receiving any curative treatment were treated by operative removal, either by the Mayo or Babcock operation. McPheeters, in a questionnaire from 119 surgeons, gathers a series of 6,771 cases operated, with a total operative mortality of .94 per cent, average days in the hospital 15.1, average number of days from work 34.6, recurrence in one year 5 per cent, in five years 10.2 per cent. Only twenty-nine surgeons reported on recurrences in the one year period, and only twenty-two reported in the five year period. Since 1926, when the advantages of the injection treatment were called to the attention of the profession, it has been used almost exclusively, due to the fact that it is just as efficient, the patient's occupation is not interfered with, the expense, as to hospital and loss of time from work, is much less, there is less danger of development of pulmonary or cerebral embolism, and there seems to be a smaller percentage of recurrences.

Treatment of varicose veins by injection of a sclerosing solution was first suggested in 1853, and since then has had periods of popularity and decline. Many different solutions were used with widely varying results. McPheeters has probably done more to popularize this treatment in America by calling attention to its simplicity, efficiency, and almost total absence of mortality, and practically no loss of time from occupation.

The solutions to be used for sclerosing varicose veins are: first, sodium chloride, 20 to 30 per cent, which is very effective in producing sclerotic changes in varicose veins, using from 5 to 10 c.c. at an injection, but has been abandoned by most men doing this type of work on account of the extreme cramp like pain and the production of slough by a small amount leaking out of the vein; second, glucose, dextrose, or invert sugar, used to a considerable extent in 50 to 70 per cent strength, has the advantage of being of low toxicity, producing only slight cramp, and seldom, if ever, producing slough, but the main objection is that it is not as efficient in producing results as other solutions. If it does produce thrombosis there is more frequent recanalization than in other solutions that have been used. Equal parts of glucose, 50 per cent, and sodium chloride, 30 per cent, or invert sugar and sodium chloride, in the same percentage, are at present used to a great extent. I have found this mixture very efficient in some cases of larger varicose veins, and in a few cases absolutely inefficient. I have had several recurrences. The cramps produced are very moderate, if any, and there is practically no toxicity. It is apt to produce slough if any leaks out of the vein, and requires a larger needle to get the solution in and out of the syringe. There are no counter indications to its use. Third, a 2 per cent solution of quinine and urethane, put up in ampoules by various commercial houses, has proven most satisfactory in my hands. The amount injected is from ½ to 2 c.c., beginning with the smaller quantity to determine the patient's susceptibility to quinine. The patient should be asked whether or not he has had toxic symptoms by the use of quinine taken by mouth. It is about 90 per cent efficient, is low in toxicity, except in those who have an idiosyncrasy, and only produces a moderate degree of inflamma-

tory reaction in the vein. It will, however, produce slough if any leaks out of the vein. It should not be used during pregnancy, and I do not believe more than one vein should be treated with this solution at the same sitting. It is most efficient in smaller and moderate sized veins. In the larger veins, however, it is not as efficient on account of the small bulk which is used and the dilution which takes place by the blood already in these vessels.

In my experience the most efficient solution to be used, especially in the larger veins, is a 5 per cent solution of sodium morrhuate, using from 2 to 5 c.c. at a dose, beginning with the smaller dose. I have found it is just as efficient as any solution used. It has a low or absent toxicity and produces very moderate cramps, if any. It does produce, in certain cases, considerable extension and venitis of Sicard, or sclerosing phlebitis. It does not produce slough which is one of its great advantages. I have seen the whole internal saphenous vein obliterated from one injection of 5 c.c., given just above the level of the knee. Two cases which I have had of this character had considerable soreness for about one week, and the loss of time was only one day in one case. Both men were clerks, necessitating being on their feet ten hours a day. I have used this solution in moderate sized veins, in small quantities, and it has proven very efficient. It has only been in use in my hands for six months and it is too early to decide upon the percentage of recurrences or recanalization, but from the feeling of the veins, three months after injection, which resembles that of a fibrous cord, I hardly believe it is possible that recanalization should occur. I have had no experience with the use of sodium jacarrolate, sodium salicylate, or mercury iodide, but, from reading literature on the subject, my impression is that these are used to a very limited extent at this time.

Histological changes which take place in injected veins, as given by Bazelis, following the injection of mercury biniodide, which probably corresponds very closely to those changes found in any efficient sclerosing solution, are noted as follows: After twenty-four hours the endothelium was swollen and partly separated from the remainder of the intima. There was no clot or thrombus and no leukocytic infiltration. After forty-eight hours the endothelium was unrecognizable and the internal surface of the vessel was covered by a deposit of fibrin. After seventy-two hours there was a clot entirely obliterating the lumen. In eight days the clot had been penetrated by newly formed connective tissue, rich in capillaries. After fifteen days the process of organization was not yet complete, but the muscular layer was described as almost completely sclerosed. After three months the vessel was greatly diminished in size and transformed into a fibrous cord, only a few isolated muscle fibers being recognizable.

Technique of Injection: Almost everyone who does a considerable amount of treatment of varicose veins by injection of a sclerosing solution develops his own technique. Some use injection between tourniquet, some use one tourniquet, some use venule occluder, which is a circular ring making pressure above and below, and the injection is made between the points of occlusion; some use the recumbent position, others with the patient in a sitting position with the legs dependent, and in some clinics practically all veins are injected with the patient in the erect position. I feel that all these different methods have their advantages and disadvantages. The method used will differ with the size of the vein, its location, the ease of entrance, and the solution used.

It is necessary to have on hand a 2 c.c. and a 5 c.c. syringe, preferably Luer, together with a needle of 22 or 24 gauge, preferably with a short bevel, as there is less danger of penetrating both walls of the vein than when using a needle with a long bevel. In the larger veins in the thigh it has been our custom to mark the course of the vein and the point selected for injection with mercurochrome or iodine, while the patient is in the erect position, then in a recumbent position, using tourniquet if necessary, inserting the needle in the vein, elevating the extremity in order to empty, as far as possible, the blood out of the vessel, and bring the solution in direct contact with the intima as undiluted as possible, and carefully injecting the solution. The needle should be left in for a minute and as it is withdrawn firm pressure made upon the point of injection. The solution which has given the best result in veins of this character, and using this technique, is sodium morrhuate. It is found that in some cases one or two injections only are necessary to sclerose the saphenous vein from the level of the knee

up to Scarpa's triangle. In veins of moderate and very large variety below the knee the same technique is used. In veins of the small and moderate variety my custom is to inject with the patient in the erect position, without the use of tourniquets, using ½ to 2 c.c. of quinine and urethane. In using this solution it is very important that blood should be aspirated from the vein before injection, and during the time of injection blood should be aspirated several times to be sure the needle has not slipped out or been pushed through the vein. It takes very little leakage of quinine and urethane to produce slough whose healing is usually a matter of two to three months. The area involved is usually very small and the discomfort suffered little, if any.

Complications: Embolus: a few cases of pulmonary or cerebral embolus following injection treatment of varicose veins have been reported, but the proportion developing from this form of treatment as compared with that of operative treatment is very small. The fact that the thrombus is produced intentionally by a sclerosing solution and is densely adherent to the wall of the vein, and later becomes thoroughly organized and ultimately converted into fibrous tissue makes one feel that the minute percentage given in the statistics is thoroughly justified. The fact that tens of thousands of injections have been given without fatality in a number of the larger clinics, such as Mayo, McPheeters, and De Takats, gives us confidence and assurance to continue treatment in view of the results obtained.

Sclerosis phlebitis, or venitis as termed by Sicard, should not be regarded as a complication; in fact, it is one of the favorable things which may occur, as a considerable length of vein becomes sclerosed as a result of a single, or possibly two, injections. It produces some pain and discomfort for a few days but very seldom requires a person to be in bed more than a day or two at a time. Application of heat gives relief. Sloughs occur as a result of error in technique, chiefly caused by going through both walls of the vein, injecting the solution just outside the vein, or failure to apply pressure on the vein after removing the needle, allowing considerable leakage.

Septicemia has been said to have occurred following this treatment. This may be due to lack of proper sterilization of the skin or instruments, or the lighting up of a pre-existing infective thrombophlebitis. The thrombus formed as a result of a sclerosing solution is an ideal media for the growth of any septic bacteria which may be introduced or already present in the wall of the vein.

The chief, and one of the most disabling, complications which can result from the presence of varicose veins is ulcer, which at times is very extensive and very disabling. Ulcers usually occur at an age when a person's earning capacity is at its maximum, and in those patients whose occupation requires being on their feet eight to ten hours a day. It is due to the failure of the blood to return in a normal way to the general circulation, causing back pressure and more or less stasis in the extremity, with accompanying edema. The skin is frequently thick and copper colored, and a chronic dry eczema may be present. In many cases it is impossible to see the veins which are feeding the area. At times the venous channels can be felt in the brawny skin and injection made in this way. Often it is necessary to bandage the extremity firmly for a few days in order to lessen the amount of induration and edema, to make visible the feeder vein. This may be done by Unna's paste boot or tricoplast bandage. Sponge rubber, bandaged firmly over the ulcer with an Ace bandage, and the patient made to exercise as suggested by McPheeters produces very good results. My personal preference is several layers of gauze over the ulcer, and a firm tricoplast bandage left on for a week. In this way considerable exudate will come through the dressing which can be wiped off, but the bandage should not be removed under five days, and if possible should be left on the full week. It is then removed, the ulcer cleaned, and the bandage replaced. If the feeder veins are sclerosed, and this treatment followed out, it is found that the ulcer will heal in a comparatively short time.

*Medical Arts Building.*

## CERTAIN FEATURES OF THE ETIOLOGY OF GOITER.*

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Under this restricted title two factors will be considered as causes of goiter.

1. Deficiency of solar radiation as tending especially to simple or endemic goiter.

*Read before the Norfolk County Medical Society, February 20, 1933.

2. Depression of the rate of tissue oxidation as tending especially to exophthalmic goiter.

Doubtless both, in the degree of intensity with which they prevail under natural conditions, affect only those individuals with a predisposing cause such as hereditary influences or a faulty diet. The nature and scope of the first factor (deficient solar radiation) is such that it may affect the thyroid gland through the medium of the air, soil, food, drinking water or the skin of the animal organism. It may operate by causing an absolute or a relative deficiency in the supply of iodine, or by causing a disturbed metabolism of iodine. McClendon's[1] study of iodine in the drinking water of the United States, Hercus, Benson, and Carter's[2] study of the iodine content of the soil of New Zealand, McCarrison's[3], and Stott and his coworkers'[4] studies of iodine supply in India, all furnish information which may be compared with available meterological data to show that areas of deficient iodine (and of goiter prevalence) tend to be also areas of deficient solar radiation[5].

The nature of the second factor (depressed rate of oxidation) is such that it may result from a variety of causes. Cyanides have this effect, and the metabolic rate varies also with conditions of temperature and humidity.

Experimental evidence as related to animals will be quoted and statistical evidence as related to man will be presented to suggest that deficient solar radiation tends to goiter, that there are demonstrable relationships between non-toxic and toxic goiter, and that conditions that may tentatively be assumed to depress the rate of tissue oxidation tend to the development of goiter and exophthalmos in animals and in man tend to an increased proportion of exophthalmic to simple goiter.

That lack of solar radiation tends to goiter is not a new idea. Quoting McCarrison[6]: "In the past many observers (Saint-Lager, 1867), have attached to want of sunlight an important influence in the causation of goiter. More recently it has been stated by Aschoff (1927) that the quantity and quality of exposure to sunlight has an influence upon the development of the thyroid gland and must be taken into account in considering the genesis of goiter. Bernhard (1927) has also emphasized that lack of light may contribute to the causation of goiter."

## Experimental Production of Hyperplastic Goiter by Deprivation of Ultraviolet Wavelengths of Light

As evidence of the influence of deficiency of ultraviolet radiation in the production of goiter is cited the following abstract of the experimental work of Bergfeld[7]:

> The histological changes in the thyroid of rats were studied following exposure of the animals to different parts of the spectrum. One group received radiation cut off at 3,500 Angstrom units; another group received radiation cut off at 3,100 A°., and a third group received radiation as low as 2,600 A°. For control purposes some rats were kept in the dark. Since previous experiments carried out in different places revealed discrepancies in the results, animals were treated alike in Bern, Freiburg and Berlin. The periods of observation in each group ran from 21 to 42 to 63 days. In some cases extracts were made from the skin of the rats exposed to ultraviolet light of long or short wavelength, and then injected into the animals kept in the dark.
>
> All rats, regardless of the place where they were treated, if they were kept in the dark or had been exposed to radiation cut off at 3,000 A°., showed identical histological changes in the thyroid. They consisted in an increase of the follicles, lack in colloid, and an extremely high follicle epithelium. These findings could not be correlated with the metabolic rate. In animals treated by ultraviolet rays down to 2,800 A°., no similar changes could be observed. Those rats which had been kept in the dark and then injected with skin extract obtained from animals exposed to short ultraviolet rays showed a definite improvement in the histological picture, as compared with the uninjected rats or rats which had been injected with extract obtained from animals exposed to ultraviolet rays of long wavelength.
>
> The author believed that he had proved, therefore, that the described changes in the thyroid of rats can be prevented or decreased by ultraviolet rays between from 3,100 to 2,800 A°.

## Statistical Evidence of the Influence of Lack of Solar Radiation as a Cause of Goiter

An examination of the data available for the United States, India, New Zealand and South Carolina[5] led to the same conclusion with respect to each, that deficiency of solar radiation tends to a deficiency of the iodine content of the thyroid gland due to a lack of irradiation of the air, soil, food, drinking water or skin of the animal organism, tending to an increased prevalence of goiter.

The data here presented will be limited to the United States except for two references to India.

Chart 1 shows the distribution and prevalence of simple goiter in young men (third decade) in the United States as reported by the Draft Board. In its broad outlines it

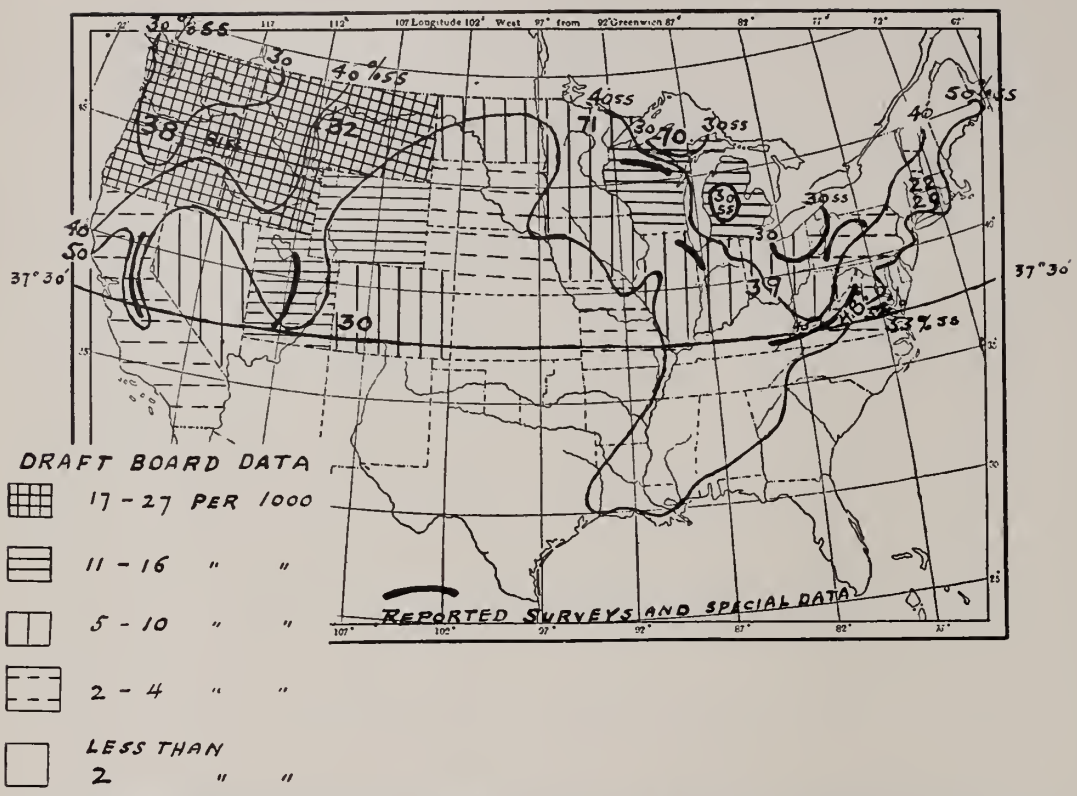


Chart 1.—Hatching values are shown in the chart. The curves, as for *30% SS*, indicate that the areas enclosed receive for the months of December, January and February an average of less than the indicated percentage of the possible sunshine according to data in Bulletin W of the United States Weather Bureau, covering the observation periods from the establishment of the stations to 1920, inclusive. The figures, as *53% SS*, within the State of Virginia are intended to show a percentage of the possible sunshine of 53 per cent for the coastal area; 52 per cent, tidewater; 48 per cent, Piedmont, and 45 per cent, mountain area. Other figures inserted within the boundaries of states represent the highest percentage of goiter found in school girls in any area of the state included in special surveys, and with the exception of the figure *39* for Cincinnati, the location of the figure within the state boundary indicates the area of greatest prevalence observed within the state. The heavy black inserts also have the same significance as to the relative prevalence within the state. The sources of these data are as follows: Oregon (Cascade Mountains), Olesen (Pub. Health Rep. 42:2831, 1927); Montana (Rocky Mountains), Foard (Pub. Health Rep. 39:2354, 1924); Colorado (Rocky Mountains), Public Health Report 40:1, 1925; Minnesota, Olesen and Clark (Pub. Health Rep. 39:2561, 1924); Michigan, Olin (J. A. M. A. 82:1328, 1924); Cincinnati, Olesen (Pub. Health Rep. 39:1777, 1924); Connecticut, Olesen and Taylor (Pub. Health Rep. 41:1685, 1926); Massachusetts, Olesen and Taylor (Pub. Health Rep. 42:804, 1927); California (Sierra Nevada Mountains), Illinois, and Pennsylvania (Appalachian Mountains), McClendon and Hathaway's may (ref. 5); Utah (Rocky Mountains), McClendon (Physiol. Rev. 7:189, 1927); Wisconsin, Olin; Virginia (Appalachian Mountains), information common to physicians in the state. (This chart and legend appeared in **Archives of Internal Medicine**, Vol. 50, July, 1932, pp. 76-123.)

shows that goiter is a relatively slight problem in states below latitude 37° 30′ N, an area in which the solar radiation of the winter months is relatively great. It shows the heaviest incidence of goiter in the Pacific Northwest, where deficiency of solar radiation is greater than for any other part of the country except in limited areas about the Great Lakes. In the region of the Great Lakes the incidence of goiter, according to the Draft Board, is next to that of the Northwest, and, indeed, according to the studies of the United States Public Health Service, greater. The chart shows a definite tendency to correlation between prevalence of goiter and deficiency of winter sunshine.

Two interesting observations have come from India, one experimental and the other statistical, relative to the influence of "the rains" in the production of goiter.

McCarrison[8] whose experimental observations did not support the influence of darkness in the production of goiter in rats, nevertheless wrote as follows:

### "Effect of Rainfall and of Season on the Goitrogenic Potency of Cabbage

"Rabbits were fed during different months of the year on a diet of fresh, raw cabbage and water for a period of fifty-six days. At the end of each experiment they were killed by air-embolism and their thyroid glands removed and weighed. The size of the gland relative to that of the body—the 'r'-value, obtained by dividing the thyroid-weight by the body-

weight (McCarrison and Madhava, 1932)—was then determined for each animal and the mean value in each experiment calculated. These mean values are set out in Table I against the total rainfall for the months in which the experiments were carried out."

TABLE I

Showing the Total Rainfall and the Size ('r') of the Thyroid Gland at Different Months of the Year in Rabbits Fed on a Diet of Fresh Raw Cabbage and Water

| Number of Experiment | Experiment Carried Out During the Months of | Total Rainfall in Inches | Mean 'r'-Values of the Thyroid Gland: mg. per 1,000 g. of Body Weight |
|---|---|---|---|
| I | November and December. | 39.5 | 749 |
| II | January and February... | 1.0 | 252 |
| III | March and April..... | 2.6 | 100 |
| IV | May and June..... | 12.7 | 224 |
| V | July and August..... | 3.0 | 157 |
| VI | September and October.. | 32.5 | 272 |
| VII | November and December. | 11.5 | 549 |

"It will be noted from the graph (Fig. 1) (not reproduced here), prepared from Table I, that the curve of 'r' values—i. e., of thyroid-size—follows closely upon that of the rainfall. The closeness with which it does so is remarkable and can hardly be regarded as accidental, though further observations are needed to establish the constancy of the association."

How this effect is mediated is not at present known. Indeed, certain results that are apparently contradictory have been reported by others. Webster[9], after injecting rabbits with 5 mg. potassium iodide one week prior to the beginning of the experiment, found that carbon arc irradiation of finely divided cabbage increases the goiter producing power of the cabbage. McCarrison's observation would appear to be more in accord with the generally observed increased potency of "winter cabbage" as compared with "summer cabbage."

The gap constantly to be recognized between animal experimentation and disease in man is, with respect to the observations in India, somewhat bridged over by the report of Stott and his coworkers[4]. These authors presented a curve showing the monthly goiter attendance at the Banpur Hospital, 1925-1926, varying from approximately 20 in August to 799 in January, and stated: "New goiters especially arise, old goiters enlarge and all goiters most rapidly develop during and after the rains, i. e., during October, November and December. . . . Attendance of out-patients at the dispensaries for goiter increases largely during the months following the rains."

## Experimental Production of Hyperplastic Goiter with Exophthalmos by Agents which Lower the Rate of Oxygen Consumption

Webster, Clawson and Chesney[10] reported that in 45 rabbits made goitrous by feeding cabbage there was an average heat production of 16.6 per cent lower than in "normal" rabbits, but certain animals, for which no cause of death could be found, showed an average increase of approximately 20 per cent in their metabolic rate during a period within two weeks of death. Iodine administered to goitrous rabbits caused a marked increase in metabolic rate, rapid emaciation, and in most instances, death.

As evidence of the production of goiter with exophthalmos by agents which retard the rate of oxygen consumption is cited the following abstract of experimental work of Marine and his coworkers:

Following upon the observation of Webster and others that there are seasonal, annual and geographic variations in the goitrogenic power of cabbage, Marine made a search for the factor in cabbage that stimulates thyroid hyperplasia in rabbits. The ether extract was found powerful. The mustard oils have given negative results. In the distillation of mustard oil from mustard meal cyanide is carried over. Organic cyanide has been extracted from three of the Cruciferae by steam distillation.[11]

Several of the organic cyanides when injected subcutaneously into rabbits daily for three or more weeks produce thyroid hyperplasia. Methyl cyanide produces the greatest thyroid reactions, and young rabbits are more reactive than adults.

Chronic bilateral exophthalmos has occurred in a significant number, having developed as early as the twentieth day. Only moderate degrees of exophthalmos have been observed. It occurs earliest in those rabbits which develop thyroid hyperplasia the quickest and appears to be proportional to the degree of thyroid hyperplasia. When exophthalmos is developed the rabbits become nervous and fidgety.[12]

Both Dr. Joseph L. Miller and Dr. Marine interpreted the reaction as an effort on the part of the thyroid to counteract a block of tissue oxidation by cyanogen.[11]

It would seem, therefore, that cabbage feeding tends to produce goiter in rabbits and that this goiter is characterized by lowered metabolism; that the metabolism may be increased and the condition rendered toxic by administration of iodine; and that cyanide produces goiter, often with exophthalmos and nervous manifestations. These results may be expressed thus:

Iodine converted cabbage-goiter into a toxic

condition, but this is not cited here as an instance of the influence of a depressor of the rate of oxidation. Cyanide, an agent which blocks tissue oxidation, probably the active principle in cabbage, produces exophthalmos in proportion to the promptness and degree of thyroid hyperplasia it produces.

The facts suggest as a possibility that the influence of (a) cabbage plus iodine and (b) a concentration of the active principle of cabbage, cyanide, both result in toxic goiter in rabbits.

In the United States, in the male sex and in the third decade, according to the data of the Draft Board[13], the prevalence of simple goiter and of exophthalmic goiter* in the different areas of the country is of the same general order for the two diseases. Both are highest in the Pacific Northwest and lowest in the Atlantic Southeast. This is seen in the chart† (chart 2, section 2), curves B and C. It is

*The classification of the United States Draft Board did not include a distinction between exophthalmic goiter and toxic adenoma. All cases of goiter with toxic symptoms appear to have been grouped under the head of exophthalmic goiter.

†In the original article[16] the data for all states of the United States were shown. The arrangement of the states was according to the ascending order of prevalence of total goiter (simple and exophthalmic), requiring for purposes of publication division into three sections. In the selection of section 2 for the purpose of illustrating this article, it follows that the states included in the section are in the intermediate group with reference to the prevalence of total goiter. Other results of the selection are that climatic conditions mean for the United States are here represented, and the section illustrates best what the article is intended to show.

## Statistical Evidence of the Influence of Temperature and Humidity on the Ratio of Simple Goiter to Exophthalmic Goiter

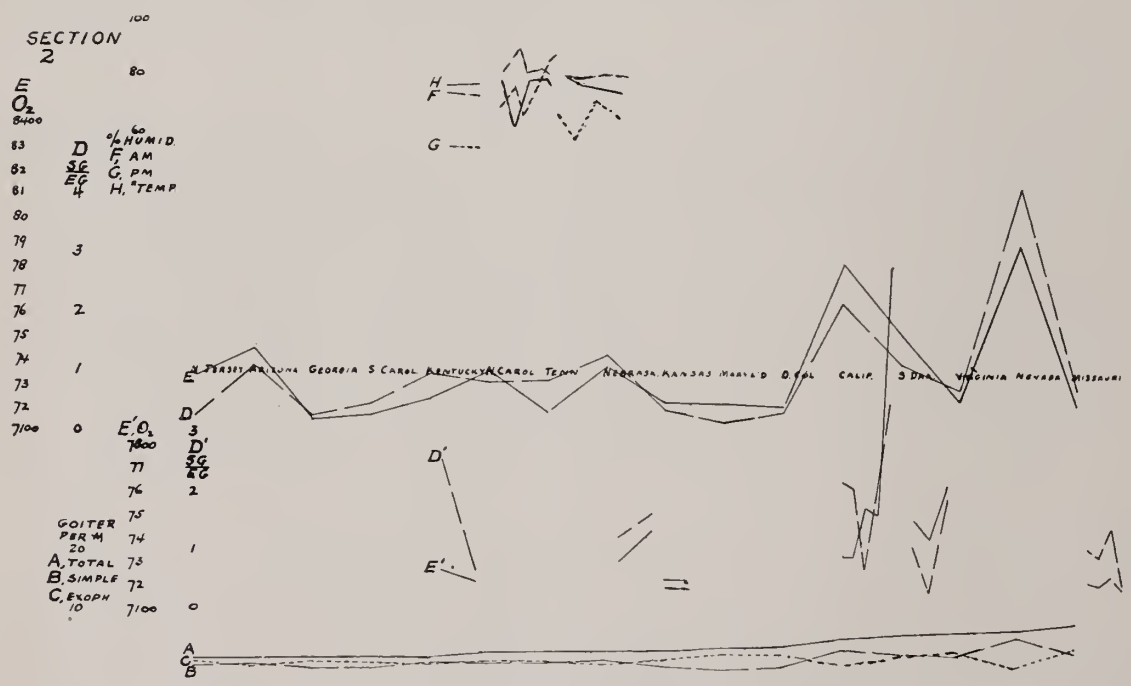


Chart 2, Section 2.

The curves represent:

A—Total goiter, ratio per 1,000 men, by states (continuous line).
B—Simple goiter, ratio per 1,000 men, by states (long dash line).
C—Exophthalmic goiter, ratio per 1,000 men, by states (short dash line).
D—Ratio of simple goiter to exophthalmic goiter, by states (long dash line).
D'—Ratio of prevalence of simple goiter to exophthalmic goiter, by sections of states (long dash line).
E—Normal oxygen consumption mean for July (continuous line).

The sources of data for this curve are as follows:

(a) For temperature mean for July and for relative humidities mean for July, Bulletin W, U. S. Weather Bureau, using for each state the data for all stations reporting from the state. Mean July relative humidity is determined by taking the mean of morning and evening relative humidity. In the central area there is an average fall in humidity from morning to evening of approximately 20 per cent.

(b) "Effective temperatures" have been determined by applying the climatic data just described to the standards as figured by Huntington,[14] and these have been translated into figures for oxygen consumption of normal men for varying effective temperatures according to the report of McConnell, Yaglou and Fulton[15].

E'—Normal oxygen consumption mean for July, by sections of states (continuous line).
F—Relative humidity at approximately 8 a. m. mean for July (long dash line).
G—Relative humidity at approximately 8 p. m. mean for July (short dash line).
H—Temperature mean for July (continuous line).

further illustrated by the figures for the States of Washington, Missouri and Florida (table II).

TABLE II
Goiter, Ratio Per 1,000 Men

| | Goiter, Ratio Per 1,000 Men | | Total |
|---|---|---|---|
| | Simple | Exophthalmic | |
| Washington (Northwest) | 23.40 | 9.42 | 32.82 |
| Missouri (Central) | 3.99 | 4.80 | 8.79 |
| Florida (Southeast) | 0.25 | 0.66 | 0.91 |

These ratios would suggest that measures which prevent simple goiter may have an important bearing in the prevention of exophthalmic goiter. There would seem to be here a promising basis for further investigation of the relationship between non-toxic and toxic goiter.

When the exact ratio of simple goiter to exophthalmic goiter is examined, the ratio is found to be reversed in the Northwest as compared with the Southeast. The ratio of simple goiter to exophthalmic goiter is relatively low in the Southeast as compared with the Northwest, with a resulting central area (section 2) where the ratio is approximately 1 to 1.

The question arises whether these data can be related to any known physiological effects of climatic factors. There are available reports of experimental observation of the oxygen consumption of normal men at varying degrees of temperature and humidity[15]. Thus is obtained a measure of the normal rate of metabolism for any given geographic area where the climatic factors are known and where they are within the limits of the factors experimentally observed. The experimental studies referred to do not allow for acclimation, but the results, within the ranges of temperature applicable to the United States, are in accord with the established tendency for the normal consumption of oxygen to be relatively low in warm climates.

The relatively high incidence of exophthalmic goiter in the warmer areas suggests that climatic conditions prevailing in the summer may be of more significance in the etiology of exophthalmic goiter than climatic conditions at any other period of the year. For that reason temperature and humidity conditions for July were selected for study.

Upon examination of chart 2 it is seen that the ratio of simple goiter to exophthalmic goiter (D) by states corresponds quite closely to the oxygen consumption (E) normal for the geographic area. Still more significant would seem to be the fact that the comparisons are applicable to territory represented by the subdivisions of states (D′ and E′) and to cities (not shown in the chart) reported by the Draft Board as separate units. Rate of oxidation is the essential feature in both sets of data. Increased rate of oxidation in toxic goiter under conditions of temperature and humidity that induce decreased rate in normal men represents, therefore, an abnormal reaction.

Regarding the subjects of simple goiter and of exophthalmic goiter as the goiter material reacting to the goitrogenic influence of a given area, approximately 50 per cent show exophthalmic goiter under the conditions of temperature and humidity in July mean for the United States. If the climatic conditions tend to lower oxygen consumption in normal men, more than 50 per cent show exophthalmic goiter. If the climatic conditions tend to higher oxygen consumption in normal men, less than 50 per cent show exophthalmic goiter.

## Summary and Discussion

Bergfeld produced goiter in rats by deprivation of ultraviolet wavelengths of light.

McCarrison observed a close relation between rainfall and the goiter producing power of cabbage in rabbits.

Stott and his coworkers reported a very great increase in attendance at the goiter dispensary at Banpur during and following the rains.

The United States Draft Board reported the distribution and prevalence of goiter in young men, and the prevalence is found to be in quite close correlation with lack of solar radiation in the United States.

Webster and others found that feeding cabbage as a large part of the diet produced goiter in rabbits and that winter cabbage was more potent in this respect than summer cabbage.

Marine and his coworkers made a search for the active goitrogenic factor in cabbage and thought it probably was cyanide. They reported that the injection of cyanide into rabbits produced goiter often with exophthalmos

and evidences of nervousness. This substance lowers the rate of oxidation of tissues.

The Pittsburgh Laboratory of the United States Bureau of Mines found that the oxygen consumption of normal men varied with temperature and humidity. Minimum levels were obtained at temperatures and humidities that prevail in summer in the southern part of the United States. This area and this season of the year, therefore, would furnish climatic conditions that would, by inference, most closely approximate the minimum levels of metabolism obtained in the experimentally conducted observations. Such an inference is in harmony with all the reported observations—to the effect that average metabolism is lower in the Southern than in the Northern States, and in the South is lowest in summer. Thus it follows that, though the experimentally observed variations in oxygen consumption under the influence of varying temperatures and humidities may not be used as an absolute measure of the metabolic rate normal to men in a given geographic area, they nevertheless afford the best available basis for a comparison of the relative rates of tissue oxidation in different geographic areas. It was interesting and suggestive, therefore, to find that the relative oxygen consumption so computed for different areas varied with the ratio of simple goiter to exophthalmic goiter, and that low rate of oxygen consumption corresponded with increased prevalence of exophthalmic goiter in proportion to simple goiter. This observation appears to acquire additional significance since Marine has shown that cyanide produces both goiter and exophthalmos in rabbits. In both instances depression of the rate of oxidation appears to tend to goiter with exophthalmos in man and in rabbits, respectively.

While the ratio of simple goiter to exophthalmic goiter in the group under discussion varied from approximately 3:1 in certain areas to approximately 1:3 in other areas, speaking now in terms of absolute numbers, exophthalmic goiter is most prevalent in areas where simple goiter is most prevalent. Where there is much of one there is much of the other. Where there is little of one there is little of the other. This correspondence in distribution and prevalence would seem to point to a common factor in the etiology of the two types of goiter. Simple goiter develops most commonly during adolescence. Exophthalmic goiter develops most commonly some ten or fifteen years later, and usually in subjects who have not developed simple goiter. If, as appears to be the case, depressed rate of oxidation favors the development of exophthalmic goiter in the potentially goitrous subject, the question arises as to whether it tends also to offset the liability to simple goiter. The data presented do not seem to offer any approach to the answer to this question.

## Conclusions

The relation of solar radiation to the distribution and prevalence of endemic goiter in the United States and certain other countries is suggestive of a relationship of cause and effect which, in the light of present data, would be considered to mean that there tends to result from a deficiency of solar radiation a deficiency of iodine in the thyroid gland due to a lack of solar irradiation of air, soil, food, drinking water or the skin of the animal organism, tending to an increased prevalence of endemic goiter.

In young men, as reported by the United States Draft Board, prevalence of simple goiter tends to prevalence of exophthalmic goiter.

The incidence of exophthalmic goiter is favored by conditions of temperature and humidity which tend under experimental conditions to decrease the rate of tissue oxidation.

Through some unknown mechanism these climatic conditions tend to activate in the subject of exophthalmic goiter substances which increase the rate of tissue oxidation or which inhibit the activity of substances normally acting as a brake on the rate of tissue oxidation.

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## VACCINE TREATMENT IN CHRONIC ARTHRITIS.*

ROY M. HOOVER, M. D., Roanoke, Va.

Arthritis, or rheumatism, is one of the oldest and most widespread of all diseases. Many of the skeletal remains of prehistoric man, including the Pithecanthropus erectus, which is supposed to date back at least five hundred thousand years, show the changes of arthritis. Frequently apical abscesses or pyorrhea are associated with the evidences of arthritis. Within historical times some of the earliest medical references are made to arthritis. It is the most frequent pathological condition recognized in studying Egyptian mummies, some of which are almost five thousand years old. It therefore appears that arthritis is not only as old as civilization, but dates back much farther toward the time of the advent of man.

Since the discovery of printing there have been many volumes published on arthritis with numerous references in other books. It was recognized as a general systemic infection long before the time of Harvey, and the opinion was expressed that the treatment must be general rather than local.

For generations it has been taken for granted that a certain large group of people will be crippled beyond all economic usefulness and suffer for years with rheumatism. Though this was considered deplorable, no great effort was made to remedy the condition. Life insurance statistics show us that arthritis is productive of more economic loss of time and disability than any other one cause. In spite of this fact, no exhaustive effort has been made by the medical profession to learn the cause and cure of the disease, although commissions and foundations for the study of tuberculosis, syphilis and cancer have multiplied and special institutions for their treatment are without number. I do not know of any such foundation for the study of arthritis, and there are almost no institutions exclusively for its treatment.

As a result of the bacteriological work of the present century the infectious nature of this disease has been demonstrated, and it is now almost universally recognized to be due to focal infection. Many workers have been able to produce typical arthritic lesions in experimental animals by the injection of certain strains of streptococci. The problem of arthritis has been greatly complicated by the fact that it is not caused by a single specific organism like the typhoid bacillus or the tubercle bacillus, but by a large group of streptococci with staphylococci and colon bacilli as contributing factors. It is known that the streptococci include almost an indefinite number under the general groupings of hemolytic, nonhemolytic and viridans. Crow, of England, by cultural means has differentiated hundreds of distinct strains of viridans sterptococci, and states that he is sure this is only a beginning. Streptococci also have a certain degree of tissue specificity, first pointed out by Rosenau a number of years ago. This specificity seems not to be quite so absolute as was at first thought, but is yet very definite. Serologically, various strains of streptococci can also be differentiated, and this fact is of great help as a guide in treatment.

When the so-called "focal infection" theory of the origin of arthritis became generally ac-

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cepted, it carried an unfortunate impression to many minds that there was a "pocket" of pus somewhere, absorption from which was causing the arthritis. The logical conclusion following this conception was that if the pocket of pus was removed the arthritis would be cured. As a result, a painstaking search was made for foci, and when one was found it was removed. Unfortunately, after this was done, most patients were unimproved or continued to progress, while a certain number made a spectacular recovery or became very much worse. In many cases even after the most thorough search no "pocket" of pus could be found.

These experiences were very discouraging. They are, however, explained by two facts, first, that a focus of infection is "an area of tissue infected with disease-causing organisms," and that no pus need be present, and, second, that by the time an arthritis becomes established there are actual infecting organisms about the joints which are not disturbed by the removal of their original point of entrance.

We now know that infected gums which are of such a degree as to be considered only a mild pyorrhea may cause as much if not more trouble than a well formed apical abscess. A generally inflamed condition of the pharynx is as important a focus as diseased tonsils, and enteritis or colitis of mild degree with constipation as its only symptom may cause more trouble than an antrum full of pus. In fact, we find that the walled off "pocket" of pus is less important than the diffuse infected area without pus formation.

Recently it has been demonstrated culturally and microscopically that all of the tissues involved in experimental arthritic joints harbor living streptococci, and that this is frequently true of the internal organs as well. We are thus convinced of the systemic character of arthritis, and of the futility of expecting cure from the removal of the original focus, even when this is possible. Of course, in some cases the infection about the joints may be so slight, and the resistance of the patient so good that he is able to overcome the disseminated infection after its source is removed.

After the successful preparation of vaccines against smallpox, typhoid, anthrax and other conditions several years ago, vaccine treatment was welcomed as a cure for all ills. Many arthritis vaccines were prepared, and in occassional cases gave good results, but in general were disappointing because, with the great variety of organisms which might be present, a given vaccine might not contain any of those infecting the given case. Autogenous vaccines were also made from all organisms which could be cultured from the patient or from individual foci, but no accurate method was known to separate the pathogenic from the saprophytic bacteria. The results were better with autogenous vaccines, but not what had been hoped.

Because of the unsatisfactory results of such vaccine treatment, non-specific protein or shock treatment was tried, most frequently using typhoid vaccine or sterile milk. In a certain percentage of cases the results were good where the patient's resistance was high, but there were often disastrous results in the more debilitated individuals.

Since the general practitioner, who has necessarily cared for this great army of arthritics, has received so little real help in treatment from any source, he has had to rely largely on local anodynes and drugs to relieve pain or increase elimination. Because of these conditions a legion of fake rheumatism "cures" are on the market. Most arthritic cases of several years standing have tried all of these that their digestion and funds will permit.

Some sixteen years ago, Dr. Burbank, of New York, began work with a certain strain of streptococcus which was isolated from an arthritic patient. He developed an active serum technique for complement fixation, essentially similar to the Wassermann reaction, but using streptococci as antigen. The number of antigens used was increased and now diagnostic polyvalent blood culture strains and focal strains from nose, throat, teeth, intestinal tract, gall-bladder, prostate, etc., are used. By careful selection of antigens the test has been made quite specific for the organisms infecting a particular group of tissues. For example, a fixation to streptococcus of dental origin indicates dental infection with the fixing type of organism. The same is true of the other regions of infecton. By this means it is possible to learn whether the patient has a streptococcus infection of the nose, throat, teeth, etc., and the type of infecting organism.

Quantitative estimation of complement is also done, which is of great prognostic value, as it very accurately indicates the patient's resistance, and helps in the determination of dosage. If complement is good, satisfactory results may be expected from treatment, while if low or absent, vaccine must be given with

great care or is contra-indicated. Those with deficient complement are the cases in which routine vaccine treatment without preliminary serological investigation is most unsatisfactory and dangerous.

In this group of cases with deficient complement we have found that repeated small blood transfusions will very quickly restore complement to normal, after which vaccine treatment can be carried out with good results and without danger.

A painstaking search for foci is made and cultures taken. A vaccine is made up from these organisms, using the compliment fixation test as a guide in the selection of strains, and killing the bacteria by phenol. It appears that vaccines prepared in this way are much more specific than those killed by heat. Because of the high specificity of the vaccine, dosage is very small, as it is essential to avoid any reaction. The dose may even go as low as five to fifty bacteria to the dose. The vaccine is usually given at weekly intervals, keeping the dose low enough to avoid even the slightest reaction.

Foci of infection should be eliminated, when possible, if the patient's resistance will justify it without causing a flare-up. Even badly infected teeth or tonsils should not be removed when the patient's condition is not good, but should be postponed until immunity has been increased by treatment to the point that they can be removed without danger. Abscessed teeth may be drained for a period before extraction until the patient's condition improves. The danger of wholesale removal of foci when the patient is not in proper condition cannot be over-emphasized, as this may so disseminate the infection and lower the patient's resistance that he will never improve. We see all too many such cases, hopelessly invalided for life, because of inopportune operative work.

While we feel that a properly prepared and properly given autogenous vaccine is the one most potent aid at our command in the treatment of arthritis, general medical treatment is not to be neglected. Diet, tonics, cod liver oil, iron, calcium and sun baths are used where needed. The patient's resistance must be kept at the highest point. Adequate elimination must also be assured, using colon irrigations at times. Exercise is essential, and in certain cases physiotherapy and massage is very helpful, but none of these should be carried on to the point of increasing pain and soreness.

I have been using the method of Dr. Burbank for over six years, and I feel that good results can be obtained in a large majority of chronic arthritics who have no undraining focus, have no other debilitating disease, such as tuberculosis, diabetes or syphilis, and are willing to cooperate in a rather long period of treatment. The improvement is necessarily slow, as it is due to the gradual raising of resistance against the infecting organisms. Fortunately the actual administration of most of the vaccine can be carried out by the family physician after the dosage has been established. Each dose is prepared in a sealed ampoule to avoid difficulty. It is then only necessary for the case to return for an occasional check up.

I wish to emphasize once more the fact that arthritis is a serious disabling systemic disease, which may be caused by one or more of a great number of organisms. Most cases of any standing are seriously debilitated, and must be handled with great care. The removal of foci of infection alone seldom helps, and frequently aggravates the condition. By close cooperation of the physician and patient good results can be obtained in a large majority of cases.

*Medical Art Building.*

## DELIVERY ROOM MANAGEMENT OF OCCIPUT POSTERIOR POSITIONS.*

RICHARD B. NICHOLLS, A. B., M. D., Norfolk, Va.

Occiput posterior positions is a subject about which a great deal can be said and about which a great deal has been written. My brief remarks will be limited to the hospital management of this condition, rather than to its occurrence in deliveries in the home of the patient. As a very common complication of labor it has been under-estimated, and the obstetrician is confronted with the non-conformity of literature and opinions as to handling it judiciously. In handling occiput posterior positions the doctor's good judgment is most taxed in the management of any given case, for it is his duty as a good obstetrician "to deliver the woman, at term, if possible, of a living child with the minimum amount of suffering and traumatism to both the mother and newborn infant."

Occiput posterior positions obviously prolong the duration of labor, especially the second stage, provided, of course, that judicious

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interference is not instituted. The prolongation of labor by the abnormally presented head thereby increases the suffering and traumatism sustained by mother and baby.

The damage done to the baby, particularly the intracranial structures, can be, and very frequently is, fatal or permanent to the child. Fetal mortality and accidents to the baby are relatively high. Dr. Edward C. Hughes, of Syracuse, N. Y., in a recent article on "Intracranial Birth Injuries," very graphically points out the intracranial damage done through this abnormal presentation. In those cases where early rupture of the amniotic sac takes place, the labors tend to begin and progress slowly. With the occiput either right or left posterior, the head enters the pelvis in either of the oblique diameters. Often the base of the skull does not become engaged or pass through the superior strait until late in the first stage or early in the second stage of labor. In the occiput posterior position pressure is exerted along the antero-posterior diameter of the head. The occipital bone, as a result of its hinge-like action in its relationship to the maternal sacrum, moves forward under the two parietal bones. The frontal bones likewise move posteriorly under the parietal bones which in turn move medially due to the lateral pressure of the pelvis and a similar attachment to the base of the skull. As a result, the baby's head is decreased antero-posteriorly and increased vertically, producing the long moulded head of which we are all familiar. The effect upon the dural septa is definite. If moulding, pressure and distortion of the baby's head is maintained long enough, the tentorium cerebri gives away, laceration results, and is followed by hemorrhage from the surrounding venous plexuses. Intracranial bleeding from the venous sinuses is a cause of still-births, and often the result of occiput posterior positions.

Early diagnosis of the position of the occiput is essential. No patient should be allowed to go long in labor without the physician making a concerted effort to satisfy himself as to the relation of the baby's head to the mother's pelvis. Abdominal palpation, location of the fetal heart sounds by auscultation, stereoscopic X-ray plates and vaginal examination all aid in making the diagnosis. Of these a vaginal examination can be of most practical value. Where there is no apparent indication for Caesarean section due to cephalopelvic disproportion or any of the number of indications that may arise, a careful vaginal examination, repeated as necessary, under strict aseptic precautions should be done. By early examination one is put on guard as to the progress of the subsequent course of labor, and an anticipation of the strategy to be used.

May I digress a minute to discuss the advocacy of rectal examinations? I have not found it possible, except in infrequent cases, to diagnose the position of the head by rectal examinations, although dilatation of the cervix and station of the head can easily be determined. In well-regulated general or maternity hospitals where surroundings and equipment are available to do aseptic examination, the vaginal examination is safe, as has been proven by statistics. However, in poor surroundings, such as in home deliveries, I do not approve of vaginal examinations or instrumentation (forceps—version), and think that rectal examinations only should be relied upon.

"Puerperal mortality and morbidity are all too prominent today, as always, in obstetric literature," and, as Adair states, "new facts and methods should be cautiously sought and, when established, generally known and applied." The best place to handle any obstetric procedure, like major surgery, is in a well-regulated hospital, and, therefore, all operative obstetrics in the home should be kept to a minimum.

Practically all occipito-posterior positions should have and need judicial interference, whether it be primipara or multipara. By allowing nature to take its course, or by relying on the edict that "time and watchful waiting are the best obstetricians," especially in posterior positions, is only to increase the maternal morbidity and fetal mortality. The best obstetrics to practice is one which will reduce the maternal distress and relieve the baby' traumatism, but to say that all posterior positions should be treated in one way, I believe to be wrong. Each individual case should be treated according to the exact condition present.

A posterior position, or any vertex presentation, will, if no incompatible disproportion be present, deliver spontaneously in the greater majority of cases, provided, of course, the woman is allowed to go on in labor long enough. They will deliver spontaneously but not normally. However, there is a certain low percentage of occiput posterior positions in

multipara who will deliver rapidly and spontaneously with the occiput still posterior without any apparent distress to either the mother or child. Such patients obviously need no interference.

In determining when the interference is necessary is largely a matter of training and experience. No interference should be considered justifiable until the cervix is completely dilated and effaced, and the presenting part, the vertex, is engaged at the pelvic brim, or is in mid-pelvis. Also, interference should not be instituted until the vertex has failed to make progress for two hours after the first stage of labor has been completed, unless, of course, some imperative indication such as bleeding, fetal distress, or maternal exhaustion, comes into play. In all of these cases it is of most importance to make certain of no cephalopelvic disproportion, especially in primiparous labors, when one would have to decide between a vaginal delivery and a Caesarean section.

In patients where the membranes have ruptured early in labor, and before the cervix is completely dilated and effaced, the patient should be given the benefits of some effective analgesia, either of oral, hypodermic or rectal administration, and allow the cervix to become completely dilated. After labor has ceased to progress for a period of two hours, the patient is in condition to have helpful interference in terminating the labor. She should be completely anesthetized, placed in the lithotomy position, with bowels and bladder emptied, and the usual external preparation done. Now a more careful vaginal examination can be made and the decision as to the best method of procedure determined. If manual rotation of the vertex is possible, it should be rotated anteriorly and the delivery very easily completed with one forcep application. If the head cannot be manually rotated, as is often the case, forceps can be applied and, the head can either be rotated, according to the method of Dr. Bill, in the plane of the pelvis in which it is arrested, or it can be pulled down to the pelvic floor in the posterior position when a Scanzoni maneuver can be done. The selection of the type of forcep to be used depends entirely upon the operator as to the one he can use most effectively. Most of these cases, however, can be rotated almost to the transverse position by hand, and the rotation completed with forceps. Great care, accuracy and gentleness are needed in any forcep rotation, because considerable damage can be done to the bladder, vagina, and fetal head by the inexperienced operator.

In patients where the membranes do not rupture early the interference may vary. If the patient has complete effacement of the cervix and at least three-fourths dilatation, with the membranes intact and no disproportion between the pelvis and fetal head, particularly after labor has been going on for several hours, especially in a multipara, an elective internal podalic version would be the method of choice. This may seem on the surface to be a rather radical form of treatment, but, in selected cases, many hours of labor can be saved without undue traumatism to the mother or child. There is certainly not the prolonged birth pressure on the fetal head, the slow moulding, and the damage to intracranial structures found in patients where the membranes have ruptured early and the occiput has become impacted in the hollow of the sacrum. Statistics from the Philadelphia Lying-In Hospital, where this method is greatly favored, reveal lessened morbidity and fetal mortality, as also lessened perineal lacerations, than in a group of patients delivered spontaneously or with forcep manipulation. Dr. Norris W. Vaux, of that hospital, recently reported a series of cases presenting occiput posterior positions, and it is his opinion that timely internal podalic version, elective in type, is justified when the cervix is fully dilated and the membranes are unruptured, in preference to watchful waiting or forceps delivery by the Scanzoni maneuver under like condition. He points out clearly that the fetal death rate under specific indications aforementioned does not cause any material increase in death rate of the newborn following delivery.

The judgment of knowing just when to do the version—in other words, a timely internal podalic version—in these cases makes the operation safe. But as was mentioned earlier in the paper, posterior positions of the occiput and the involved mechanism is one of the most misunderstood and badly handled complications of labor, and, to treat them properly, each individual case should be managed according to the exact condition presented.

By way of summary, there are a few points that may bear reiteration:

1. Occiput posterior positions are annoying complications of labor which demand careful

judgment in order that best results may be obtained for both mother and child.

2. The intracranial damage due to prolonged unrelieved birth pressure in the occiput posterior position is definite in its ravages.

3. Early diagnosis of the position of the head is of prime importance in order to anticipate and plan a course of treatment.

4. Operative obstetrics of any type indicated in the management of obstetric complications should be done only in well-regulated hospitals.

5. Manual and forcep rotation of the occiput should be given preference in the choice of procedure where the membranes have ruptured.

6. Internal podalic version in selected cases is justified in that the end-results to a trained obstetrician are better than in those cases where difficult forcep rotation under like conditions had been resorted to.

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400 *Wainwright Building.*

## FRACTURES AROUND THE ELBOW JOINT IN THE HANDS OF THE GENERAL PRACTITIONER.*

T. K. McKEE, M. D., Saltville, Va.

During the past four years of our somewhat rural practice of medicine we have seen 300 cases with fractures. Forty of these have been fractures around the elbow joint. And let it be said here that we lay no claim to originality in diagnosing or treating these cases, nor do we believe that our results are better than those of other general practitioners. We are simply reporting average cases and conditions which are arising daily in the work of the country doctor.

These fractures have varied in severity from simple chips of the epicondyles of the humerus to compound, comminuted injuries involving the three bones of the articulation and as many displacements as the anatomy of the part will allow. Some have come to us 48 hours after injury with prodigious swelling involving the elbow and forearm, with large blebs completely encompassing the joint, while others have been seen with T-fractures of the lower end of the humerus complicated by rotation of the lower fragment.

Living as we do in a mountainous section, we make contact with all classes—from the almost primitive to the better, well-educated individual. Naturally, the treatment must harmonize with the surroundings of the patient. Of the better class, there is little to be said. These are treated under the best available conditions. But of the ignorant the story changes. We well know the mountaineers' superstitious dread of hospitalization, amounting almost to panic. Hence, many of these are treated in their own environment. It is not unusual to climb for miles along narrow paths, reaching, after much labor, some isolated cabin. Here the patient is seen with a two-day-old injury, the entire arm encased in stinking plaster of onion, tobacco, fat meat,—one or all. Removal of this layer in the great out-doors is to be recommended. At this point we reach a grimy integument the filth of which is of no lesser age than the injured person. On this single visit the doctor is expected to diagnose, prognose and cure or kill the patient. And the doctor devoutly agrees that this is a consummation to be desired.

Our age incidence is from 5 to 75 years, the majority occurring between 9 and 16 and more often in the male than the female. Practically all of these injuries result from direct violence.

Our first effort on behalf of the patient is to establish a diagnosis. The part is X-rayed in two planes (we are not equipped for stereo films) and, with the aid of deep anesthesia, a careful examination is made. Especial attention is paid to the circulation distal to the injury. By direct pressure, counter-pressure and traction we attempt to restore the fragments to their anatomic relations. In the cases of fracture of the lower end of the humerus with backward displacement of the fragment, we turn the palm forward and put up in flexion as acute as the circulation will admit. We gauge this latter by radial pulse. The apparatus for retaining position may be a pad in the elbow with adhesive around the arm and

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forearm and a sling over all. In some we have used plaster, enclosing the entire arm, in others an anterior, angulated splint with the joint well padded. In our experience, however, the majority of these cases can not be flexed further than 90 degrees on account of circulatory embarrassment. In two cases, on account of swelling and edema, no flexion was attempted. The arm was allowed to lie on a pillow at the carrying angle. Both of these cases have 100 per cent function. Hence, it may be understood that we have treated these cases in all degrees of angulation from acute flexion to the carrying angle, depending upon conditions.

Uncomplicated fractures of the olecranon are treated in extension on the long, anterior splint with adhesive strips dragging down on the upper fragment.

When possible, we see these patients six hours after manipulation, noting swelling, circulation and general condition.

In the typical cases between 9 and 12 years, we begin passive motion within two weeks. After 3 to 4 weeks, all support is removed and the arm allowed to hang at the side. The patient is encouraged to carry small weights in the hand to assist in straightening the arm.

At this time we supplement our treatment with diathermy. Here, too, care must be exercised in selecting patients, for some of them are rather skittish and believe this machine to be a radio-connected instrument of execution. More than one rural, cross-country runner has decamped with a pair of electrodes and yards of copper wire attached. In trade, he leaves a ragged over-all jacket the pockets of which contain nothing save a couple of highly polished buckeyes.

Our results have run the scale of recovery as truly as has our treatment but not in proportion. Some untreated cases have regained 100 per cent function. One much treated case has 90 per cent dysfunction. However, we have 25 cases who appear to have perfect use of the joint.

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## INTRA-OCULAR FOREIGN BODY—CASE REPORT.

JOHN A. PILCHER, JR., M. D., Roanoke, Va.

The following case is reported because of its uniqueness in the fact that the patient has no cataract after having had a piece of steel penetrate the entirety of the lens, and because the case history is a typical one of intra-ocular foreign body.

The patient is a male, 22 years of age, who came into the office February 29, 1932, complaining of having gotten something in his left eye on the afternoon of February 26, 1932, and that his eye was still sore. He gave a very typical history of an intra-ocular foreign body which is as follows: On the afternoon of February 26, 1932, about two and one-half days prior to his visit to the office, while hammering on the spring of an automobile, something got in his left eye. One of the employees of the shop immediately removed a small piece of something from his left eye and he felt better. However, the next day his eye was red and gave him some discomfort. On February 29, 1932, two and one-half days after the accident, his eye still being red and sore, he came to the office.

His vision was O. D. 20/15; O. S. 20/200. His left eye showed a moderate amount of photophobia and circumcorneal injection. Located at five o'clock was a small scar in the cornea showing some pigment. The pupil was contracted, and the iris reacted sluggishly. Upon slit lamp examination there were seen deposits on the posterior surface of the cornea, and small floaters in the anterior chamber; and the corneal scar appeared to involve the entire thickness of the cornea. The tension of the eye was normal. Upon dilating the pupil with atropine, a scar was seen in the lower portion of the lens. The eye was anesthetized, the pigment removed from the corneal scar, and then the left orbit was X-rayed for intra-ocular foreign body. A suspicious shadow was seen on the X-ray plate. A patch was placed over the left eye and the patient sent home. The next day his eye looked better and the anterior chamber was clearing. However, it was impossible to see the fundus clearly, due to the cloudiness of the anterior chamber. Atropine was instilled, the eye was repatched and the patient told to return the next day.

Upon the next visit, March 2nd, the anterior chamber was clear and a small shining object could be seen in the vitreous body, which, upon slit lamp examination, proved to be a piece of steel floating in the vitreous. The eye now being quiet, the patient was advised to have the steel removed from the vitreous body.

The following morning he entered the hospital. The piece of steel could still be seen

floating in the vitreous. Small deposits appeared on the posterior surface of the lens. Under local anesthesia, after the conjunctiva and Tenon's capsule had been incised, a small V-shaped incision was made in the sclera between the median and inferior recti muscles about one cm., posterior to the limbus of the cornea. By means of a magnet the piece of steel was removed. Tenon's capsule and the conjunctiva were sutured with black silk. The patient was caused to remain in bed two days, and was discharged on the fourth day.

In about ten days his eye was quiet. His vision continued to improve. On June 17th, glasses were prescribed, his vision being 20/25 with correction.

The above case shows the importance of carefully examining the eye in which there is a foreign body. The history is typical of nearly all cases of intra-ocular foreign body. When a case comes in giving the history of something getting into the eye while hammering upon stone or metal, it is important to carefully examine the eye to determine whether or not a penetrating wound is present. When in the slightest doubt, it is wise to X-ray the orbit for intra-ocular foreign body. It is strange to note that little pain is caused by sharp pointed bodies entering the globe. Some complain of no pain at the time of injury, but only of sudden decrease in vision with the appearance of a red eye twenty-four to forty-eight hours later.

All intra-ocular foreign bodies should be removed, if possible, especially metallic foreign bodies, for irritating salts of the metal soon form about the foreign body, and a very painful eye results, which usually comes to enucleation. Fortunately steel is the most common intra-ocular foreign body and the easiest to remove, it penetrating the eye as the result of a flying chip from a hammer. Copper is the worst and most irritating of all, its salts being very injurious to the eye. Stone is rare as an intra-ocular foreign body; at the same time its presence is well tolerated, and it is wise not to attempt to remove a piece of stone should it be in a position where it is doing little harm, for more damage may be done by attempting to remove it. All organic intra-ocular foreign bodies, such as wheat, straw, and the like, should be removed immediately if possible, for they soon disintegrate and produce a very painful eye.

## PILONIDAL SINUS.*

GUY W. HORSLEY, M. D., Richmond, Va.

The lesion known as pilonidal sinus or, as it is sometimes called, sacral dermoid, is not generally considered to be of major surgical importance, nor is it a rare condition, but on account of the frequent mistakes made in its diagnosis and treatment it does deserve attention.

Pilonidal sinuses and cysts are congenital in origin, and are supposedly formed due to faulty coalescence of the cutaneous covering over the sacrum during embryonic life. It is doubtful if the neurenteric canal has any part in its formation, as was formerly believed. The defect has also been considered to be an exaggeration of the post-anal dimple commonly observed in this situation, and, therefore, is a sequestration dermoid due to the skin being shut off from the external surface.

Another theory as to their origin, and probably the best one advanced so far, has recently been set forth by H. B. Stone, of Baltimore. He calls attention to the preen, or oil gland, of birds, which lies imbedded in the subcutaneous fat over the last caudal vertebra. It consists of numerous straight tubules lined with polyhedral epithelial cells. These tubules converge into a common sac which in turn empties through an epithelial lined duct on the skin of the back. In birds there may be one or more ducts leading to the skin, as many as six being reported in some species. Through the orifice of this duct there are usually a few hair-like feathers protruding. These are called "the wick."

The direction of these ducts is inward and cephalad, exactly similar to that of the pilonidal sinus. The secretion of the preen gland is used by the birds to oil and condition the feathers. Stone says that Paris has shown that not only in birds but also in some species of reptiles and mammals similar structures are found, and concludes as follows: "Certainly it may be said that in many species of animals the skin about the sacrococcygeal and anal region possesses the power of developing glandular structures strongly suggestive of a relationship to pilonidal sinus. It then may be assumed that in certain individuals of the human race this latent potentiality for some rea-

*From the Department of Surgery, St. Elizabeth's Hospital, Richmond, Va.

Read before the meeting of the Southside Virginia Medical Association, Petersburg, Va., December 13, 1932.

son develops into an actuality and results in the structure known as a pilonidal sinus."

A pilonidal sinus should not be difficult to

Fig. 1.—The usual position of the sinus opening. The straight line indicates the skin incision. The dotted line represents the amount of subcutaneous tissue removed.

diagnose, and generally presents itself in the midline just over the sacrococcygeal joint. (Fig. 1.) There is usually one orifice; fre-

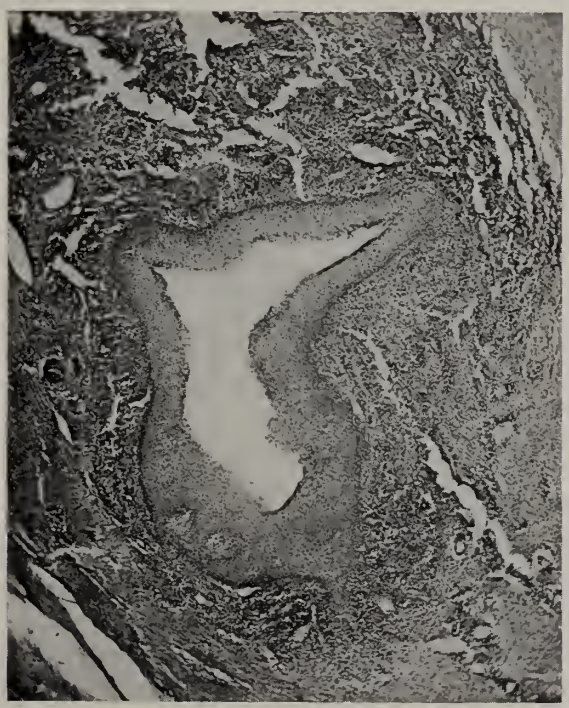

Fig. 2.—Photomicrograph of the cross section of a sinus lined with stratified squamous epithelium. There is much infiltration and infection about the sinus. (X43.)

quently from this a thickened cord-like tract can be felt just under the skin, and the sinus tract can be demonstrated by a probe passed upward at a slightly increasing depth. If there has been some infection, one or more openings may be present, and these may obscure the diagnosis. The edges of the original orifice are smooth and rounded and often a small tuft of hair is found protruding through it.

The sinus leads upward and inward toward the sacrum, ending in a blind sac, but does not actually come in contact with the bone. It consists of a firm fibrous canal, lined with stratified epithelium, and also contains hair follicles and sebaceous glands. (Figs. 2 and 3.) The cavity usually contains sebaceous material and hair.

Although these sinuses are congenital, they do not usually give trouble until early adult life. The patients give a history of intermittent discharge that has lasted for some time, but they do not seek medical aid until the

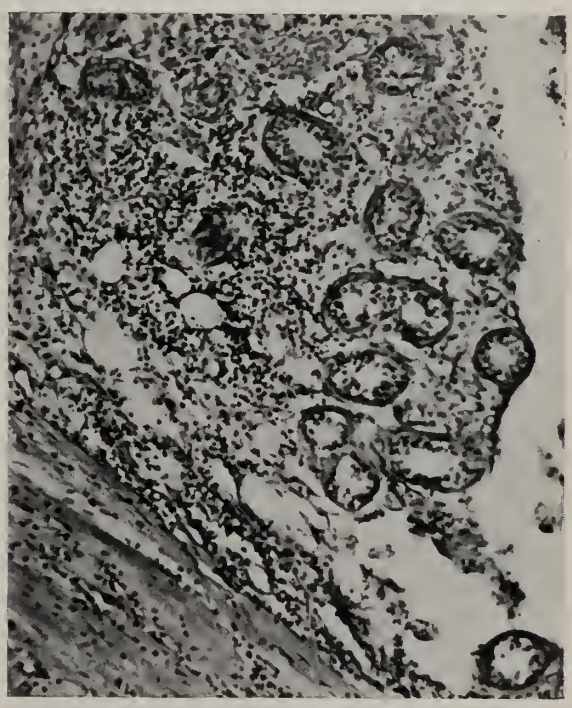

Fig. 3.—Photomicrograph (X150) of the glands found deeper in the fatty layer about a sinus.

sinus has become infected and purulent material is being discharged. Eventually nearly all of these sinuses become infected, due to their proximity to the anus. Because these patients are generally not seen until an infection has occurred, the diagnosis is often obscured and an asymmetrical abscess in the su-

perficial fat of the buttocks may be confused with a carbuncle, and one whose orifice is close to the anus with a peri-anal abscess. A fine probe passed into the sinus should definitely distinguish between a pilonidal sinus which invariably leads upward and inward, and an anal fistula which would lead downward toward the anal canal. In a case of osteomyelitis of the coccyx or sacrum, bare bone could be felt with the probe. These sinuses are more frequently found in males than females, and as yet have not been reported as being seen in the negro.

The only satisfactory treatment of pilonidal sinus is block dissection of the lesion, including the skin, subcutaneous tissue, sinus and sac en masse. Thus the dissection goes down to the fascia of the gluteal muscles and the parasacral fascia. Complete excision, including a fairly good margin of healthy tissue is necessary due to the fact that the hair follicles and sweat glands which open into the sinus may be a little distance in the surrounding fat, and there would be a recurrence if any of these

Fig. 4.—The entire specimen just after removal.

glands were left. (Figs. 4 and 5.) The importance of such an operation is quite forcibly brought out when we note that all but one of the twelve operative cases of our series have had one or more previous operations performed on these lesions, without relief of the symptoms. These previous operations consisted of everything from a simple scraping of the tract to a supposed excision of the entire sinus, but the radical procedure had not been attempted in any case.

Since infection is usually present, and the circulation in this area is poor, it is best to treat these cases with hot wet dressings for a day or two to clear up some of the infection before attempting total extirpation. In those cases which are severely infected, it may be advisable to incise and drain for a week or more before proceeding with the radical operation. Post-operative infection of the wound has been found to be greatly diminished by excising the tissue with the endotherm which

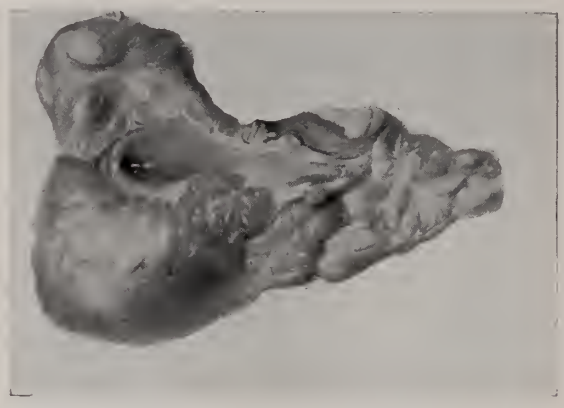

Fig. 5.—Same as Fig. 2, with the sinus and sac opened.

prevents further spread of the infection already present.

One of the disadvantages of the block dissection is that a large area is left which may be difficult to fill in, and, if left to granulate, a great deal of time is required for the defect to be filled and a large mass of scar tissue is formed directly over the sacrum. This scar would be constantly subjected to pressure and trauma when the patient is sitting down, resulting in much pain and discomfort. This disadvantage has been overcome by undermining the edges of the incision for several centimeters, drawing the fat together in one layer, and then passing heavy sutures completely through the fatty tissue and skin, thus relieving some of the tension, and obliterating the dead space. (Fig. 6.) The skin is further closed with fine sutures. Several other methods have been advocated, such as making additional lateral incisions to relieve tension, but this gives a larger amount of raw surface, with a greater possibility of infection and scar tissue. Cases seen before infection has occurred should have the sinus excised, since such a wound could be closed cleanly. This operation would be shorter and much easier than if it were put off until infection had occurred.

Within the past three years there have been 15 cases of pilonidal sinus observed in St. Elizabeth's Hospital. Eleven of these cases were admitted with the draining sinus as the

chief complaint, and all of these had been operated upon one or more times elsewhere. Four cases were noted on routine examination, and one of these submitted to operation; the remaining three refused operation since they had had no trouble except for an excess secretion of sebaceous material just above the anus. Of the 15 cases, 9 were males and 6 were females, with the ages varying from 19 to 49 years, the average being 28.

All of the operations were done by Dr. J. Shelton Horsley, and I assisted at each.

The eleven patients who were operated upon for infected pilonidal sinus gave a history

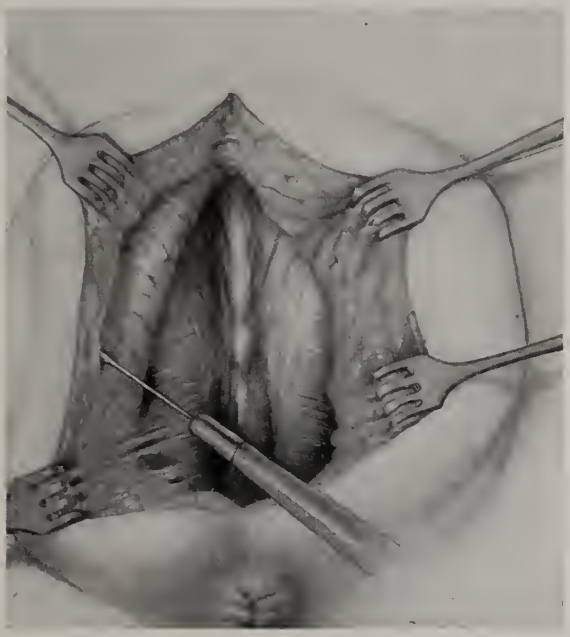

Fig. 6.—The incision after block dissection of the lesion, showing the fascia of the gluteal muscle and the para-sacral fascia, also the method of undermining the margins of the incision with the endotherm.

of pain and purulent drainage for from one to fifteen years. After the previous operations, relief of their symptoms would be obtained for several weeks, at the end of which time there would be some pain and swelling and finally drainage.

In the last few cases healing has apparently been aided by keeping the patient from lying on his back, and thus preventing further bruising and trauma. The possibility of infection, if not already present, has been greatly diminished by keeping the patient constipated for several days after operation, and, when an enema is given, letting the patient use a commode instead of a bedpan, thus eliminating the danger of contaminating the wound during defecation.

Four of these cases have been operated upon in the past two months and the final results on them cannot be stated at this time; however, there has been no recurrence of symptoms in any of those operated upon, and no uncomfortable scars have resulted, since the skin was closed in each case.

These patients are always among the most grateful ones, because usually they have been through several operations previously with return of symptoms, and finally being without a foul discharging sinus is of untold relief to them.

617 *West Grace Street.*

## MULTIPLE BILATERAL PRIMARY LESIONS WITH BILATERAL ADENOPATHY IN TULAREMIA.

STAIGE D. BLACKFORD, M. D., University, Va.

Bilateral tularemic ulcers with bilateral glandular swellings are relatively rare. Dr. Walter Simpson writes that in the 103 infections occurring in the vicinity of Dayton, Ohio, he has found only one. Dr. Edward Francis, in a personal communication, states that he knows of only six cases which have been reported in the literature, but that he has record of nineteen more. Since bilateral involvement of the glands in tularemia might easily be confused with general glandular diseases, it seems worth while to call attention to the possibility of its occurrence. In the following case, several diagnoses were considered before, on direct questioning, the typical history of tularemic infection was obtained.

### Report of Case

A fifty-four year old colored farmer was seen in the Out-Patient Clinic on October 19, 1932. His chief complaint was enlargement of the glands in both axillae and the left epitrochlear region. He volunteered none of the following history until specifically asked.

On September 22, 1932, he had caught, killed, skinned and eaten a young rabbit. Three days later he had been forced to bed by severe headache, extreme prostration, chills, sweats, insomnia and vomiting. On the fourth day after infection, he had noted four "sores" on the

*From the Department of Internal Medicine, University of Virginia Hospital.

dorsum of the left hand and two on the volar aspect of the right hand. One week after skinning the rabbit, he had first observed enlargement of the left epitrochlear and both axillary glands. At about this time a severe productive cough had prompted him to call his physician who told him that he had "bronchitis with fever." Shortly thereafter the patient had begun to improve in all his symptoms and had gone back to work. The "sores" had healed promptly, but the glands had increased in size and had become slightly painful.

Fig. 1.—Tularemic ulcer scars on each hand.

Fig. 2.—Bilateral glandular enlargement from tularemic ulcers on each hand.

The essential abnormal physical findings were four small ulcer scars on the left hand and two on the right with the left epitrochlear glands measuring approximately 4½x6 cm., the left axillary 4½x7 cm., and the right axillary 3½x5½ cm. All of these glands were slightly tender, but there was little, if any, fluctuation. Temperature, urinalysis, hemoglobin, red and white blood cell counts were normal. A specimen of blood serum agglutinated B. *tularense* in dilutions of 1:1280.

On November 9, 1932, the patient returned because the glands were paining him so much. At this time, the glands were soft and fluctuant, and were incised and drained.

## THE INFLUENCE OF PREGNANCY AND DELIVERY ON THE PHYSICAL AND MENTAL HEALTH OF THE CHILD.*

HOWARD R. MASTERS, M. D., Richmond, Va.

The continued progress and stamina of our state and country is dependent upon the sanity and stability of the present and future generations. One's ability to adjust himself to this ever changing, increasingly more difficult, law ridden and custom shackled environment is proportionate to the quality of his progenitor's germ plasm, to the accidents attending birth and during life, to the nutriment supplied him, to his emotional guidance, to the efficiency of the social, educational and economic environment provided for him by the community.

What the future child is to be is largely contingent upon the physical and mental status of the ancestors and more directly the parents. For this reason persons contemplating matrimony should feel it their duty to determine their eligibility to parenthood. Physical and mental disease, the use of alcohol and drugs, and sometimes unhappy marital states, are not conducive to healthy normal offspring.

Every pregnant woman should put herself under the guidance of a physician. He will determine her status. The activity of the mother's glands of internal secretion influence the growth and development of the foetus as much as the child's glands influence his status in adolescence. For instance, under-secretion of the thyroid gland in the mother may be responsible for her going beyond term, which in turn causes the baby to be larger than average and may result in a slow labor, difficult delivery and the liability to brain hemorrhage. Imbalanced gland secretion is usually accompanied by disturbed body chemistry, especially lime deficiency, which endangers the mother's teeth, deprives the bone and nervous

*Read before the State Conference on Childhood and Youth, called by Governor Pollard, November 24, 1931.

system of an essential mineral, and makes the infant liable to rickets. The physician will direct his attention to the environment and mental attitude of the mother and attempt to prevent emotional stress and strain, combat time worn superstitions and wagging tongues which are far too often responsible for fears distressing to the mother. Just at this point, I want to say that the infant's emotions are unquestionably influenced by the bickering and squabbling which goes on in some homes.

For want of time I am assuming that the physician will investigate and care for heart, lung, kidney, liver and the various acute and chronic infectious disease when existent.

Concerning delivery, I might say that the welfare of the infant is dependent upon the past health and physical structure of the patient, the prenatal care, the facilities for the delivery, the technical qualifications and judgment of the obstretrician in handling the situation present at the time of delivery.

Brain hemorrhages from rupture of one large vessel to many tiny hemorrhages may occur from prolonged labor, contracted pelvis, certain drugs acting on the uterine muscles, suffocation, instrumental delivery or sudden release of compression. The aftermath of any of these varies with the extent of trauma (injury), the kind of structure involved, and location of the accident in the brain. The results of some of these accidents may be immediate, that is within a few days, while symptoms of others may not appear before one to four years. Early examination and treatment may aid in restoring the individual to normal or at least assist in approaching the normal. Wherever there is a question of damage within the skull a neurological examination should be made and, in case of suspected brain hemorrhage, a spinal puncture should be done. The writer is of the opinion that every case of suspected brain injury in the new born should have such a puncture. The quiet, inert, so-called good baby is just as apt to have suffered from brain injury as the stuporous, restless or irritable infant, and deserves thorough investigation.

Incident to delivery is the mother's physical, nervous and mental condition. Some may develop emotional disturbances, others mental symptoms; in the latter case the symptoms are usually acute, the mother acquiring a destructive attitude towards the infant. Immediate separation is important, and special protection of the mother is imperative. Disturbances of the thyroid gland may appear early in infancy and with proper treatment can be controlled. The various paralyses and deformities resulting from damage at birth may be improved or corrected by the neurologist, orthopaedist or neuro-surgeon. It is of paramount importance to determine to what extent the deformity will handicap the individual from a nervous, mental and physical standpoint, and institute treatment and guidance at an early age.

The infant lives at first by instinct and sensation, which are acts of self-preservation. Soon he is to learn the pangs of desire and the pleasure of gratification. The parental pitfall lies in satisfying these desires. Sympathetic indulgence of the loving mother and proud father are detrimental to the emotional make-up of the infant and a source of many of the difficulties in management of the child thereafter. The parents could save themselves much trouble and insure their child's stability if they would consult the family physician and child guidance clinics for instruction and literature on the subject. Let me warn you that not all the books on child welfare and guidance are acceptable.

We are fast coming to the belief that the basic psychological principles of life are developed in the first three or four years and that the reactions and behavior of the individual are directly proportionate to the guidance given during this early period. If this be true, every physician, nurse, social worker, and dispenser of welfare knowledge should make it his duty to see that the uninformed parents are given the proper instruction.

The success of this conference lies in the unity of a crystallized plan, the cooperative effort of the civic and professional organizations concerned in disseminating the findings of the commission, and in the support of our state government. I would therefore recommend that the Department of Public Welfare and the Health Department of the Commonwealth of Virginia cooperate to organize a plan to be put into effect through the various state medical, welfare and educational organizations at its disposal. Persons contemplating matrimony could receive proper advice and opinion as to their nervous and mental fitness by consulting the State Mental Hygiene Clinic and parents with young offspring may obtain guid-

ance in mental hygiene of the child. The State Prenatal Clinic will furnish instruction to pregnant women and provide hospitalization for the seriously ill, while the welfare organizations will care for the guidance of the mother and child.

212 *West Franklin Street.*

## THE USE OF CONCENTRATED GLUCOSE IN THE TREATMENT OF ACIDOSIS IN CHILDREN.*

ROGER H. DuBOSE, M. D., Roanoke, Va.

Acidosis is a condition frequently seen in infancy and childhood, but rarely in adult life except in diabetes mellitus. It is chiefly due to a carbohydrate starvation. Whenever carbohydrates are limited or suspended the normal metabolism cannot go on. The fat metabolism merely smokes, resulting in acetone bodies being thrown in the urine.

During normal metabolism a considerable amount of acid substance is produced and under normal conditions they are eliminated as ammonia and phosphates, and if ammonia is excreted in excess it is indicative of a beginning acidosis. Among the normal constituents of the plasma are protein, sodium bicarbonate and inorganic phosphates. The sodium bicarbonate is relatively the most important in preserving the normal alkalinity of the blood and body tissues. In other words, acidosis may result from an over-production of acids or over-elimination of alkalines, which, in due time, will effect the alkalinity of the blood. As long as the alkaline base is not affected, most authorities claim you do not have a true acidosis, regardless of whether there is acetone series in the urine or not. The carbon dioxide tension is increased in true acidosis, which is one of the most reliable tests as to whether acidosis is present or not. Carbon dioxide tension of the alveolar air is normally between forty and forty-five m.m. According to Morse, thirty-five means a mild acidosis and twenty or less a severe acidosis.

It occurs to me that the carbohydrates are not well utilized or the supply is insufficient, especially in children who are offsprings of neurotic families. The metabolic mechanism is easily upset. Acidosis is more commonly seen in children who suffer with malnutrition, recurrent or psychic vomiting, from excitement, fatigue, infection, or in those whose nerve centers are unstable and are easily disarranged. In the robust individual the carbohydrate intake is well tolerated, which possibly is responsible for the infrequent occurrence of acidosis.

It appears to me that there is a relative acidosis seen in children whose urine contains acetone bodies, yet have no evidence of increased carbon dioxide tension or labored breathing. This condition may be brought about by a sudden onset of gastro-intestinal upset or undue excitement, starvation, etc., in which the alkaline reserve has been affected but not to the stage, clinically, of a true acidosis. It is a known fact that ketosis in humans does not begin immediately upon starvation or a high fat diet, but after combustion of the glycogen supplies in the body; after these are depleted, acetone appears in the urine. If a suitable amount of carbohydrates are not injected the alkaline reserve will be depleted and a true acidosis will result. We still have some authorities who believe that when acetone bodies are found in the urine acidosis is present. Personally, I have seen this condition repeatedly and if glucose is given, a more severe form of acidosis is apt to be prevented, as we know that acidosis is the result of a starvation carbohydrate. During faulty metabolism such as found in acidosis, the fat oxidation continues to smoke, not burn, and acetone bodies are thrown in the kidneys. Upon injection of the carbohydrate, acetone bodies are no longer formed in the blood and urine, and the faulty metabolism is corrected and normal oxidation takes place.

It is interesting to know that Karo corn syrup contains a mixture, chiefly, of dextrin, maltose and dextrose, with a small amount of sucrose flavored with vanilla extract, which makes it very palatable. According to the manufacturers, corn syrup is made by hydrolysis of high-grade cornstarch in dilute hydrochloric acid suspension. The mixture is heated under steam pressure until chemical test indicates the desired degree of hydrolysis. For detail of its chemical composition, I refer you to the *Journal of A. M. A.*, January 9, 1932, Volume 98, Number 2, Page 143. There is a little difference in the chemical composition of the different brands of Karo. The caloric values are the same, 3.0 calories per gram, 85 per ounce.

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., September 21, 1932.

According to Osborne, dextrose-glucose is the normal constituent of the body tissue. The carbohydrates are probably largely absorbed as such. The maltose formed by hydrolysis of cornstarch cannot be absorbed as such, but is converted into dextrose-glucose by the enzymes in saliva, ptyalin and amylopsin in the pancreatic juice, and is stored in the liver and muscle tissue as glycogen. Dextrin is an intermediate product between starch and dextrose and it is finally split into dextrose and absorbed as such. Dextrose is the least easily fermented and the most readily absorbed of the monosaccharides. The disaccharides and the polysaccharides, like starch, are not absorbed as such but are split up by the enzymes in the alimentary tract into monosaccharides.

For the past five years I have used the concentrated white crystal corn syrup (which is glucose) orally, in all of my outside cases of acidosis. In the hospital we used glucose intravenously. According to our records, these individuals were under ten years of age. They gave a history of having been sick two or three days, either from intestinal upset, or from some infection, diarrhea, fatigue or undue excitement, shock, from a surgical operation, starvation, etc. In the majority the intake of carbohydrate had been limited for one reason or another. These individuals were listless and irritable, the pulse weak and thready, the skin was dry, the lips more or less red and parched, the pupils were usually dilated, the eyes were oftentimes sunken, and dehydration had occurred. The respiration was deep and labored. The patients sighed a great deal as if having trouble getting air (air hunger). Temperature varied from 100 to 103 or more. They vomited freely, and water, orange juice or cracked ice could not be retained. Almost all of them were extremely thirsty. Acetone breath could be detected in most of them unless some particular type of fruit juice had been given to disguise its odor. The urine contained a heavy trace of acetone and diacetic acid.

The intravenous injection of glucose is a valuable therapeutic procedure, which has been neglected in small children as well as some older ones, due to the fact of the difficulty of getting into the small veins. If the individual is in the hospital it is an easy procedure to give the child an intraperitoneal of five per cent glucose, provided that route is practical. It occurs that with most clinicians the greatest thought is getting fluids into these individuals insteads of carbohydrates. The use of glucose by rectum oftentimes causes abdominal distention and much irritation; the patient becomes restless and requires constant attention of the nurse to carry out orders.

We have found for practical purposes the use of Karo orally is well received by almost all children. It appears to have an antipyretic action as well as diuretic. We also have noticed that in a mild attack of acidosis diacetic acid was not present in the urine, but acetone was. In a more severe form both acetone and diacetic acid would be present. We have not checked any of the blood sugars in these individuals with so-called acidosis (arrangements are being made to do it now), but we have found by experience that when twelve to sixty grams or from one-half to two ounces of pure crystal corn syrup was given orally in broken doses at one to two hour intervals, the acetone breath and acetone bodies in the urine disappeared in from six to twelve hours. The individual was no longer listless or irritable but full of pep. They would receive fluids generously and retain them without the further use of Karo. We have used it in over a hundred cases of acidosis as a result of burns, shock, infection, starvation or intestinal upsets. Our results with Karo in treating these cases have been most gratifying. I urge you to try it where the use of an intravenous injection of glucose is not practical.

923 *Third Street, S. W.*

# Analyses, Selections, Etc.

**Misuse of the Caduceus.**

I have read your note on the Danish charity stamps of 1929 with interest. What you have to say therein reflects a curious confusion about the caduceus which is common in the United States, even among medical men. For the caduceus (or caduceum) has no connection with medicine and the device shown on the Danish stamps is not a caduceus. The stamps were sold for the benefit of the Danish Cancer Committee and the designer has properly chosen the symbol of Asklepios, the god of medicine.

The Asklepian symbol is a serpent twined about a stick; the caduceus consists of two serpents intertwined about a wand surmounted by a pair of wings. It is symbolical of Hermes, the god of highwaymen, robbers, athletes and traveling salesmen, the patron of commerce and the fat purse, and who had no relation to healing. Its erroneous use as a symbol of healing seems to be confined to this country particularly among government medical men and services. However appropriate it may be for some American doctors, with its connotation of profit, it is not the symbol of the medical profession in general and it is not used by the American Medical Association nor by physicians and medical services abroad. All of these latter use the true Asklepian symbol.

This use is traditional and has continued from the early days of the Greeks. Asklepios (or Aesculapius) was always shown in Greek and Roman art with a single snake usually coiled about his staff but never with the caduceus. It is not known who Asklepios really was, whether man or god, but it is related that his skill at healing was so great that Pluto complained that he was depopulating hell and that he was thereupon annihilated by Zeus. He appears in the heavens as a constellation, The Serpent-Holder. His principal seat was at Epidauros, whence he was imported to Athens and to Rome.

I have taken this information from an interesting discussion of the two symbols and the misuse of the caduceus in an article "The Caduceus," by Stuart L. Tyson, D. D. (Oxon.), in *The Scientific Monthly* for June, 1932, on page 492 of volume 34.

The Danish stamps are properly designed with reference to healing, but they do not show the caduceus and if they did such use would be improper.—(*Selected.*)

**Medical Service for the Indigent of Warren County, Virginia.**

Because of its interest for doctors generally, we are publishing the following article, which recently appeared in the *Monthly Calendar* issued by the Bureau of Public Health Nursing:

Reports show that very few young medical graduates are locating in rural communities: as old physicians die or retire from practice, it often occurs that no others come to replace them. Probably the chief of the many reasons for this is that the young physician who has spent so much for his education is not willing to endure the hardships of a country practice for the small amount of money he can collect. The good roads now traversing most of the country enable the patient with money to go to a hospital or the city to consult a specialist; consequently a large part of the practice of the rural physician is with charity or semi-charity cases.

The amount of charity work demanded of the average physician in the country is beyond all reason, yet of course those absolutely unable to pay should not be allowed to suffer. The Board of Supervisors of some counties have been paying bills submitted to them for treatment of indigent cases, but no satisfactory system in this has been devised whereby all can be helped and the physicians receive anything like adequate compensation. The physician should be paid a reasonable amount for caring for indigents; it is just as much the duty of the county to do this as it is to pay for sheep killed by dogs, or provide jails for the punishment of crime.

Warren county is trying out a plan which we believe is fairly satisfactory to all concerned, and in a modified form, probably might be carried out successfully in any county.

In March, 1932, the Warren County Board of Supervisors looked about for a way to economize and yet do justice to the physicians and the indigent sick. The following arrangement was agreed upon: Each of the three physicians of the county is to be paid a stated sum for the services rendered county dependents during 1932-1933, the physicians each serving a month at a time, making a total of four months per annum, per physician. The person needing medical aid must get an order to that effect from the county overseer of the poor.

The Board realized that medical treatment is often ineffectual because the doctor's orders are not carried out; so the public health nurse was instructed to visit the families receiving treatment and give them such instruction in hygienic matters as seemed most needed.

The County Medical Service to the Indigent and the County Public Health Association drew up the following list of requisites for free medical attention:

1. Families of patients must follow the instructions in hygiene given by the physician

and the nurse in caring for the sick members.

2. Patients with communicable diseases must follow the directions given by the physician and the nurse, and obey the rules of quarantine and isolation.

3. (a) Prenatal cases must report to the Health Center in their districts, at least five months before the time of expected delivery. (b) Expectant mothers must attend the conference periods held in these places for their instruction. (c) Each mother must visit a physician for examination at least once before delivery, and take the baby with her for examination when it is six weeks old. (d) Each expectant mother must follow the nurse's instructions in preparing for delivery.

Warren county has four physicians this year in active practice, and if the present plan continues in operation, it would seem that satisfactory results should be forthcoming.

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka St., Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Ave, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 S. Market St., Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Ave., Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Ave., Richmond.

### Welcome to our Newest Auxiliaries.

On March 16th, the doctors' wives from Newport News and vicinity met at the home of Mrs. J. T. Buxton for the purpose of discussing the value of a Woman's Auxiliary in their community. By invitation, Mrs. Franklin Wilson, President of the Norfolk County Auxiliary; Mrs. Southgate Leigh, State Chairman of Education and Program, and Mrs. William Lett Harris, State President, spoke on the aims and purposes of an Auxiliary. Instead of one Auxiliary being organized, three came into being, namely, an Auxiliary to the Warwick County Medical Society, Mrs. W. S. Snead, President; an Auxiliary to the Elizabeth City County Medical Society, Mrs. John Cullinan, President, and one to the James City County Medical Society. Mrs. J. R. Tucker, President.

A hearty welcome is extended to them. An interesting account of their organization and proposed activities will be published in the June issue of the Monthly.

### Invitation to Milwaukee Meeting

The members of the Woman's Auxiliary to the Medical Society of Wisconsin and to the Medical Society of Milwaukee County extend to the wives of members of the American Medical Association a most cordial invitation to be their guests during the coming meeting of the American Medical Association to be held in Milwaukee the week of June 11, 1933.

An interesting program will be offered. Entertainment is being planned and every effort is being made to insure a pleasant and comfortable stay while you are our guests.

We are anticipating with great pleasure your being with us in June, and we urge your cooperation in securing a large and representative attendance.

Reservations may be made by writing to the Hotel Pfister, Milwaukee, which will be Auxiliary Headquarters.

Very sincerely yours,
Mrs. Fred Nause,
*Pres. Woman's Auxiliary to the State Medical Society of Wisconsin.*
Mrs. Rock Sleyster,
*Pres. Woman's Auxiliary to Med. Society of Milwaukee County and National Convention Chairman.*

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In response to the most cordial invitation of the Convention Committee, of whom Mrs. Rock Sleyster is Chairman, I would add, the least we can do is to accept if at all possible. The committee has spared neither time nor money to arrange a good time for us. I am sure most of us can spare the time, and the money need not be a great stumblingblock, since Mrs. W. S. Liefort, 4103 N. Murray Ave., Milwaukee, Chairman of Reservations, writes a room may be had at the Woman's Club for $1.00 per night. The Y. W. C. A. have rooms at $1.00 and dormitory service at 75c per night; also a cafeteria, where excellent meals are served. You know the World's Fair in Chicago is just a few hours away from Milwaukee. Why not have two trips in one?

Very sincerely,
Mrs. Edward Clay Mitchell,
*Chairman.*
Mrs. Ed. Quick,
*Vice-Chairman, Inter-state Committee.*

**Milwaukee Invites You.**

When you come to Milwaukee in June to attend the annual convention of the Woman's Auxiliary to the American Medical Association, you will find a store of pleasures awaiting you. First of all, the program, as arranged by the local committees, under the chairmanship of Mrs. Rock Sleyster, is completely arranged for your pleasure and entertainment; and secondly, the City of Milwaukee is such a friendly and hospitable metropolis that the combination will leave a pleasant impression upon your memory.

Milwaukee is situated on the western shore of Lake Michigan, the largest fresh water lake in the country. Its beautiful harbor is the deepest and one of the largest on the Great Lakes. Through the city three navigable rivers wind their ways into the heart of the down-town district and empty into the lake. The pioneers found the rivers and the lake to be important means of transportation but they never dreamed of what they would mean to the commerce and industry of the new-born city in days to come. Today Milwaukee ranks the twelfth largest city in the United States, with a population of approximately 800,000.

You may be surprised to know that besides being a commercial city, Milwaukee is really a beautiful residential city. Its parks and playgrounds scattered throughout the city cover an area of more than 1,500 acres. These parks scattered along the lake shore and the courses of the rivers and dotted picturesquely throughout the city, offer the comforts of beauty, recreation and rest to all who come to them.

Lake Park, the northeast edge of Milwaukee, is a fine expanse of woodland on Lake Michigan, and its approach from the down-town district, along Lincoln Memorial Drive, is one of the most beautiful features of the city. The Drive is a wide concrete boulevard, extending for six miles along the lake shore, passing by the wild-life lagoon, the Coast Guard Station, the Yacht Club, the Gun Club, and many bathing beaches, and then leading directly into Lake Park, from which it continues on through one of the exclusive residential districts.

Washington Park, on the west side of the city, has as its feature the nationally known Washington Park Zoo. It is the largest municipally owned animal exhibit in the United States. It boasts of a unique Monkey Island, where thousands of people yearly watch the many different types of monkeys frolicking about unhampered on this island. Another new and recently completed attraction is a barless bear den, constructed as a natural refuge, separated from the onlookers only by a very deep moat, from which the bear cannot escape.

Mitchell Park, on the south side of town, is famous for its conservatory and the wonderful displays of chrysanthemums, orchids and many rare flowers. In addition to this there is a formal sunken garden, most beautifully arranged and planned.

Be sure to avail yourselves of the privileges which Milwaukee women will afford you to see these and many other lovely parks and the surprisingly beautiful residential districts.

Downtown you will find the hotels modern and clean, and convenient to all convention activities, as well as to the shops and tearooms. The New Pfister Hotel ("new" because it has been remodeled recently), is an old and famous hostelry, where many of our country's presidents have stayed while in Milwaukee. You will particularly enjoy the noted and extremely valuable art collection on the mezzanine floor. This hotel, as you know, will be our Auxiliary Headquarters.

There is another important but very different reason for your coming to Milwaukee this year. Chicago, with its great World's Fair, "The Century of Progress," is only eighty miles away, or two short hours by bus, train, or electric. Whenever before was it possible to make two such interesting and valuable trips in one?

Not only the doctors and doctors' wives, but all of Milwaukee will welcome you most heartily when you come in June. Already the most minute plans for your pleasures and comforts are being made, and if you have any suggestions as to some particular service which you think our guests would appreciate, just drop a note, with the suggestions, to the General Convention Chairman, Mrs. Rock Sleyster, 1220 Dewey Avenue, Waumatosa, Wisconsin, and she will see that your wish is carried out if it is in any way possible.

*Remember the dates, June 12th-16th*, and begin now to tuck away the necessary dollars to make it possible for you to partake of the many benefits of the convention and of Milwaukee hospitality.

# Truth About Medicine

In addition to the articles enumerated in our letter of January 28th, the following have been accepted:

Don Baxter Intravenous Products Corporation
- Sterile 2½% Dextrose Solution in Vacoliter Container.
- Sterile 5% Dextrose Solution in Vacoliter Containcr
- Sterile 7½% Dextrose Solution in Vacoliter Container.
- Sterile 10% Dextrose Solution in Vacoliter Container
- Sterile 20% Dextrose Solution in Vacoliter Container.
- Sterile 25% Dextrose Solution in Vacoliter Container.

Hille Laboratories, Inc.
- Colloidal Mercury Sulphide—Hille

Hoffman-LaRoche, Inc.
- Ampules Scopolamine Stable—Roche, 1/100 gr., 1 c.c.

Bilhuber-Knoll Corporation
- Metrazol Solution 10 per cent.

Diarsenol Co., Inc.
- Neodiarsenol, 1.5 Gm. Ampoules.
- Ncodiarsenol, 3 Gm. Ampoules.
- Neodiarsenol, 4.5 Gm. Ampoules.

Hixson Laboratories, Inc.
- Diphtheria Toxin-Antitoxin Mixture 0.1 L+.
- Diphtheria Toxin Antitoxin Mixture 0.1 L+ (Sheep).
- Diphtheria Toxoid
  - Diphtheria Toxoid two 1 c.c. vial package
  - Diphtheria Toxoid one 10 c.c. vial package.
  - Diphtheria Toxoid one 30 c.c. vial package.
  - Diphtheria Toxoid twenty 1 c.c. vial package.

Lederle Laboratories, Inc.
- Plantain Pollen Antigen—Lederle.

Merck & Co., Inc
- Chlorbutanol (Hydrous)—Merck.
- Chlorbutanol (Anhydrous)—Merck
- Neocinchophen—Merck.

The following products have been included in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R.:

Merck & Co., Inc.
- Bismuth Betanaphthol—Merck
- Bismuth Subsalicylate—Merck
- Phenobarbital—Merck
- Procaine Crystals—Merck
- Thymol Iodide—Merck
- Don Baxter Intravenous Products Corporation
  - Physiological Sodium Chloride Solution in Vacoliter Containers.

## NEW AND NON-OFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Diphtheria Toxoid—U. S. S. P.—A diphtheria toxoid (New and Non-official Remedies, 1932, p. 370), prepared from diphtheria toxin whose L + dose is 0.2 c.c. or less by treatment with formaldehyde. The product is standardized to contain in 2 c.c. enough of the toxoid for one immunization treatment. It is marketed in packages of two 1 c.c. vials; in packages of twenty 1 c.c. vials; in packages of one 6 c.c. vial; in packages of one 20 c.c. vial; and in packages of one 30 c.c. vial. United States Standard Products Company, Woodworth, Wis.

Maltine with Mineral Oil and Cascara Sagrada.—A mixture of liquid petrolatum (New and Non-official Remedies, 1932, p. 245), 40 c.c., and Maltine (New and Non-official Remedies, 1932, p. 273), 60 c.c., containing a non-bitter extract of cascara sagrada representing 2.2 Gm. of cascara sagrada per 100 c.c. The Maltine Co., Brooklyn, N. Y. (Jour. A. M. A., February 11, 1933, p. 411).

Sterile 5% Dextrose Solution in Vacoliter Container.—Each 100 c.c. contains dextrose, U. S. P. (New and Non-official Remedies, 1932, p. 262), 5.25 Gm. Don Baxter Intravenous Products Corporation, Chicago.

Sterile 10% Dextrose Solution in Vacoliter Container.—Each 100 c.c. contains dextrose, U. S. P. (New and Non-official Remedies, 1932, p. 262), 10.5 Gm. Don Baxter Intravenous Products Corporation, Chicago.

Ampules Scopolamine Stable—Roche, 1/100 gr., 1 c.c.—Each ampule contains 1.2 c.c. (1 c.c. contains 0.0006 Gm. of scopolamine hydrobromide). Hoffmann-LaRoche, Inc., Nutley, N. J. (Jour. A. M. A., February 25, 1933, p. 574).

## PROPAGANDA FOR REFORM

Jerusalem Artichokes.—The *Pittsburgh Medical Bulletin* calls attention to a newspaper advertisement describing artichokes as "The new and only non-starch vegetable garnish for your Thanksgiving turkey. Highly recommended for diabetic and reducing diets." The claim has been advanced that the artichoke, though containing 17 per cent carbohydrate, contains a sugar, inulin, which is peculiarly suited to the needs of the diabetic patient. The hydrolysis of inulin and its subsequent utilization in the body is no different from that of other sugars, as far as the metabolism of the diabetic patient is concerned. As the *Pittsburgh Medical Bulletin* succinctly remarks, "If the doctor will do the prescribing and the grocer will do the selling, this will be a safer and a better world." (Jour. A. M. A., February 4, 1933, p. 342).

So-Called Special "Diabetic Foods" or Special Foods for Sugar and Carbohydrate Restricted Diets.—There is authoritative evidence that commercially prepared special "diabetic foods" are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. The designation of a food as a "diabetic food" merely because it is low in carbohydrates is now unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Lay advertising for these special foods shall not include disease names such as diabetes nor directly or indirectly indicate that the foods are curative or increase the ability of the body to utilize sugar, or give the impression of harmlessness when eaten in unrestricted amounts by diabetic patients. Advertising of a medicinal or therapeutic character shall be limited to medical periodicals or material for physicians exclusively. The package label shall conform to the preceding requirements. (Jour. A. M. A., February 11, 1933, p. 411).

Crystalline Vitamin D.—It has been apparent for some time that the irradiation products of ergosterol represent a mixture of substances of which only a varying proportion is the active vitamin D. Conse-

quently the question has arisen whether the toxicity known to be exhibited by very large doses of irradiated ergosterol are due to the vitamin itself, so that one could speak properly of hypervitaminosis, or to contaminating derivatives produced by the transformations of the natural sterol. Considerable progress has been made more recently by the fractional purification of the products of ergosterol irradiation resulting in the isolation of crystalline substances of noteworthy potency out of the mixtures formerly obtained. The latest report, by Professor Windaus records the isolation of what appears to be the antirachitic vitamin D in pure crystalline form. At least five other concomitant products of the irradiation process have also been separated—most of them in crystalline form. None of these exhibit antirachitic potency. Windaus and Luttringhaus have come to the conclusion that the pure vitamin D is not entirely devoid of toxicity. A dose of 0.075 mg., representing 3,000 international D units, is toxic to mice. The relative toxicity of pure vitamin D has been demonstrated to be far less than that of its common contaminants Whether the naturally occurring vitamin D of cod liver oil is actually identical with the chemically produced compound remains to be ascertained. (Jour. A. M. A., February 11, 1933, p. 426).

Recent Revisions or Elaborations of the Council's Rules of Interest to Manufacturers and the Medical Profession.—The Council on Pharmacy and Chemistry reports that it has made the following revisions of its rules: 1. Use of Numerals or Letters in the Names of Medicinal Products. The Council voted to amend the comments to its rule concerning trade names by addition of the following statement: Since the use of numerals or alphabetical designations in connection with drug names tends to take the emphasis away from the name and to displace the name, thus leading to confusion, the Council will not recognize the name of a drug in which the numeral or letter is an integral part of the name, except in special cases where the use of a numeral or letter seems desirable because further improvement of the product is anticipated, in which case the Council may grant a special exemption from the rule Under this rule the use of numerals or letters in connection with the name of a product will not be permitted on labels or in advertising, unless the numeral or letter is clearly separated from and subordinated to the name by type and if feasible by position. This rule shall not apply to price lists and catalogues. 2. Labelling of Ampules to Indicate Excess Content. The Council voted to amend the paragraph on "Statement of Composition," New and Non-official Remedies, 1932, p. 14, by the addition of the following: In the case of solutions marketed in the form of ampules the term "—c.c. size" will be accepted as a proper indication of the volume of contents, the significance of that term being understood to be that the ampule contains a sufficient excess of medicament to permit the withdrawal and administration of the dosage indicated by the size denomination. Individual ampules, or unit packages thereof, must bear a statement explaining the significance of the term "size" as it applies in a given instance. For example, if ampules are labeled "2 c.c. size," a satisfactory statement will be "Each ampule contains a sufficient amount to permit withdrawal and administration of 2 c.c." 3 Statement of Potency of Liver Extracts. The Council rules that manufacturers of liver extracts shall be required to limit statements concerning the potency of the representative fraction marketed to the affirmation that a given quantity of extract represents or is equivalent to the antianemic potency of a given quantity of fresh liver. 4. Use of Chemical or Pharmaceutical Name. To remove the ambiguity of the present provision, the Council voted to revise the sentence "For all definite chemical substances it is required that the scientific name be given prominence on the labels, in circulars and advertisements" (New and Non-official Remedies, 1932, page 19), to read: "For all definite chemical substances it is required that the scientific (chemical) names be given prominence on the labels, in circulars, and in advertisements; provided that for those substances for which there are recognized Council or Pharmacopeial names, such names shall be used and the scientific name need not appear." 5. Declaration of Composition of Non-medicinal Articles "Accepted But Not Described." The Council declared that the rule for declaration of composition of accepted medicinal articles should also apply to non-medicinal articles and voted to revise the statement concerning non-medicinal articles "Accepted but not Described" (New and Non-official Remedies, 1932, page 492), to read as follows: *Non-medicinal* Articles.—Articles which have been examined by the Council, which are not advertised as therapeutic agents, the composition or essential ingredients of which are quantitatively declared on the label and in the advertising, and the use of which under ordinary circumstances is, in the opinion of the Council, not contrary to the public welfare. (Jour. A. M. A., March 4, 1933, p. 660).

# Book Announcements

**The History of Dermatology.** By WM. ALLEN PUSEY, A. M., M. D., LL.D., Professor of Dermatology Emeritus, University of Illinois, etc. Charles C. Thomas. Springfield, Illinois and Baltimore, Maryland. 1933. Octavo of 223 pages. Illustrated. Cloth. Price, $3.00.

William Allen Pusey, sometime President of the American Medical Association, and the American Dermatological Association, did not arrive to this pre-eminence accidently. It is true that he has ranked for years with the foremost of American Dermatologists and his textbook on Diseases of the Skin is, in the opinion of the reviewer, the most desirable of American textbooks on the subject. Books are to be read, and some books though valuable in text lack so in readableness, as to make them boring. This charge can never be laid at Dr. Pusey's door, and the outstanding virtue of his textbook, after meeting scientific criteria, is its pleasant style and attractive English. Indeed, after hearing him speak many times and noting the language of extemporaneous occasions, a suspicion begins to form, that in his elevation to high office, the influence of good English cannot be overlooked. His latest work is

the History of Dermatology, published by C. C. Thomas.

The casualness of the presentation is artistic in that it hides the amount of work necessary for its production. The style is easy and flowing and it is very readable. A Dermatologist can hardly lay it down and it must have a large charm for anyone interested in the history of medicine. Dr. Pusey carries the subject from era to era. Necessarily certain men stand out in these eras and of these, short biographies are given. The advance of the specialty in this way switches from one country to another and the story becomes a biography of those who created the successive steps in dermatological progress.

It is almost a pity that someone else could not have written the part of modern dermatology in America for modesty has dictated he should ignore his own achievements. He mentions the use of Carbon Dioxide Snow in skin therapy but does not mention himself as the father of this valuable procedure. Nor does his pioneer work in X-ray therapy receive any mention. This is, no doubt, acting the part of the gentleman physician, but such books become future references and if other editions follow, at least a footnote would not be out of place, giving facts without comment.

A most valuable appendix is an historical index of Dermatology. This gives alphabetically the list of dermatological conditions. It states who discovered, or named them, and provides a reference for future reading. This alone makes the book worthy of place in any library.

THOS. W. MURRELL, M. D.

**Infants and Children.** Their Feeding and Growth. By FREDERIC H. BARTLETT, M. D., Director of the Department of Pediatrics, Fifth Avenue Hospital, New York City. Farrar & Rinehart, Inc., New York. 1932. 424 pages, complete index. Price, $1.50 net.

This book, as the author explains in the preface, is written especially for the parents of healthy infants and children. He has given a great deal of advice which should be very helpful to parents, at the same time warning them that the physician must be sent for early when the infant or child is not doing as well as it should.

The chapters on feeding inform the reader that normal babies, in due time, will thrive on most any of the common types of food if not overfed and that all new foods should be given at first in small amounts to be gradually increased.

Such subjects as care, training, and habits of the infant and child should prove interesting and instructive to parents, as they are written in a very simple and clear manner.

Contagious and other common diseases are touched upon, giving the reader some insight as to their prevention. The prevention of scarlet fever through active immunization was not mentioned. However, it could have been, since protection has been ably demonstrated in hospitals where nursing staffs have been well protected through immunization against the disease.

Emergency treatments for the common poisonings and accidents are dealt with in the final chapter.

Dr. Bartlett's book should prove to be a great comfort to those parents who desire to have a guide on their table for reference as to the feeding and handling of infants and children.

LEE E. SUTTON, JR., M. D.

**The Aetiology of Tuberculosis.** By DR. ROBERT KOCH, with an Introduction by DR. ALLEN K. KRAUSE. Published by the National Tuberculosis Association, 450 Seventh Avenue, New York City. March, 1932. Cloth. Octavo of 48 pages.

This book is a translation from the German of the original paper announcing the discovery of the Tubercle Bacillus, read before the Physiological Society in Berlin, March 24, 1882, and published in the *Berliner Klinische Wochenschrift*, 1882, xix, 221, specially prepared for *The American Review of Tuberculosis*, March, 1932, by Dr. and Mrs. Max Pinner.

**Hospital Service in the United States.** 1933. Twelfth Presentation of Hospital Statistics by the Council on Medical Education and Hospitals of the United States. The 1932 Census of Hospitals. Reprinted from the Hospital Number of the Journal of the American Medical Association. March 25, 1933. Price, 50 cents.

**The National Society for the Prevention of Blindness.** The Prevention of Blindness and the Conservation of Sight as a Cooperative Movement; The Eye Physician in Industry; Vision Testing for the Young Child; Will History Repeat Itself?; Curriculum Problems in Sight-Saving Classes; Facts and Fallacies Concerning Squint (Cross-Eye); Illumination and Eyesight in Industry; Eye Accidents in Child Play; The Importance of Social Service and Follow-up in Preventing Blindness; Medical Social Service in Saving Sight; Social Hygiene and Prevention of Blindness Pamphlets published by the National Society for the Prevention of Blindness, 450 Seventh Ave., New York City. These range in price from 5c to 15c.

# Virginia Medical Monthly

Founded by Landon B. Edwards, M. D., April, 1874
Owned by Medical Society of Virginia Since November, 1919

PUBLICATION COMMITTEE
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All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.
Subscription Price: $2.00 per annum in advance. Single Copies 25c.

Volume 60 MAY, 1933 No. 2


# Editorial

**Symptoms in Cerebral Arteriosclerosis.**

Cerebral arteriosclerosis is the most common of the disorders of the blood vessels in the brain. An associate of high blood pressure, elicited by testing the arterial pressure in the arm, cerebral arteriosclerosis forms the needed background of that vascular accident, cerebral hemorrhage. Cerebral hemorrhage suddenly places the patient in the state of unconsciousness, paralysis and impending death. Such a picture of extreme danger is common in the practice of practitioners. It occurs in the instance of the busy man, at his office or work, or the laborer; it occurs in the instance of elder women or middle-aged women. The accident of cerebral hemorrhage may cause immediate death; it may produce a condition of profound stupor with distress in breathing and cardiac action; it may leave the patient semi-conscious and yet paralyzed; it may produce no deep or marked effect upon the conscious state, but the evidence of various degrees and locations of paralysis. Such a clinical entity, with various manifestations, forms a not infrequent problem of practice without previous warning or knowledge. Further, such a profound clinical state may be in the offing of certain cerebral and systemic symptoms, and, it is reasonable to assume, may be interpreted as such by careful inquiry.

Patients with cerebral arteriosclerosis come complaining of headache, dizziness, ringing in the ears, a knocking sensation in the head, a fullness in the head, and an inability to concentrate. Such patients may be irritable. Mental symptoms may occur. There may be signs of memory impairment, emotional disturbance, periods of mental confusion, loss of confidence, delusions, speech disturbances, visual disturbances, and like mental disturbances. The strain of modern life, the unusual tax and stress of present economic conditions, the prevalence of irritating and vexing environment, insomnia, drug addictions, alcoholic and other stimulants of the present-day type and methods of addiction, seem, it would appear, to bring to the fore of clinical practice a larger incidence of such cases. Practitioners may require extraordinary patience to pursue to a true analysis the complaint of the periodic patient, who gives expression to symptoms bordering upon the type heretofore suggested. A case of high blood pressure, coming to the office because of insomnia and seeking some soporific relief, may be the patient who is all but the victim of cerebral vascular accident of one sort or another.

With such observations, one may thoughtfully peruse a recent paper by Sands,* which forms the suggestive reference for this running comment. This condition so frequently falls within the purview of the family physician, the general practitioner and the internist, that a review of the vascular mechanism of the brain as placed before the reader by this paper would seem most salutary.

Sands draws attention to the disproven old idea of end arteries in the brain, and to the

*J. A. M. A., November 5, 1932, page 1599.

demonstration that the capillary bed of the whole cerebral cortex is an endless network and free anastomosis exists between the capillaries of the surface and the depth of the brain. He points out further work showing the presence of nerve endings in the pial vessels and intracerebral vessels whereby stimulation of the vagus causes dilatation, and stimulation of the sympathetic causes constriction. Such facts are of significance as one evaluates and interprets the complaints of patients with cerebral symptoms and high blood pressure.

Sands draws attention also to the Virchow-Robin lymphatic spaces in the adventitial sheaths of the cerebral arteries. This anatomical finding is more or less accepted by many workers in neuropathologic material. It is this system which would seem to be needed to assist in the elimination of catabolic substances occurring in the brain, when under the stress of the environment of the present times and under the incubus of arteriosclerotic changes in the cerebral vessels.

On a basis of the above, one may follow Sands' observation in regard to the subject of vascular spasm. It is quite conceivable, says Sands, that the artery may respond to some irritating toxin circulating in the blood. He also states that the cerebral vascular spasm may be responsible for various gastro-intestinal and possibly some so-called neurotic symptoms that are present in people suffering from arterioscleroses. May it not cause transitory hemiplegia, hemianopia, aphasia, and hallucinations? Whether or not such inquiry may be substantiated by anatomical proof or post-mortem findings is a question. But it is not beyond reasonable assumption that important and ominous disturbances are at work in the face of such presenting symptoms. Practitioners may "view with alarm" patients complaining of such mental dysfunctionings. This viewing with alarm may be interpreted as taking a wise professional attitude towards a grave intracranial possibility that may threaten the usefulness and life of the complainant who is, for the moment, under professional care.

It is the common experience of practitioners that such patients may be "snatched a brand from the burning," so to speak, if proper precautions are employed. The precautions are, of course, not always so easy to put into practice, for many reasons. But the difficulties presenting should in no way deter the attempt or the effort to employ the measures that offer a possible escape from the effects of cerebral hemorrhage.

It is a common experience of practitioners that such patients, even after cerebral accident with brain hemorrhage, may be able to lead comfortable and sometimes useful lives for years, sometimes decades. The possibility of such a rescue from an untimely end may well stimulate every general medical examiner to be on the alert to properly interpret cerebral symptoms associated with arteriosclerosis.

**Harmful Effects of Nitroglycerin.**

As one comes along the years, employing a drug, one feels a certain sort of certainty and confidence in its effects and results. Co-temporaneously with the history of blood pressure records, nitroglycerin has held a large place. Wide use of it as a vasodilator has made its place important in hypertensive cases. In angina pectoris, it has been a sheet anchor. Patients threatened with angina pectoris have formed the inviolate rule of keeping hypodermic tablets of nitroglycerin in the watch pocket, as a place from which it might be gotten at all times in case of an attack. So it is rather important to practitioners to note the word of caution recently appearing in medical publications concerning its employment in certain conditions. While it is not to be expected that so widely used a drug will be discarded, it is desirable to give due consideration to the statements of observers who have found cause for discriminating use of it.

Prodger and Ayman* critically observed 110 patients to whom nitroglycerin was administered. In this group, four patients displayed alarming reactions. They noted in these instances a rapid and marked drop in blood pressure, a marked diminution in pulse rate, a cold perspiration, weakness, restlessness, anxiety, and pallor. In one case complete heart block was produced.

In coronary thrombosis we have a lesion displaying pain and sometimes hypertension and often characterized by a marked fall of blood pressure. Employment of nitroglycerine in such a disease-condition seems inadvisable and doubtful. While its use for pain in pure angina is often magical and immediate. Clinicians and practitioners may need to exercise most penetrating accuracy in evaluating the

*American Journal Medical Sciences, October, 1932.

real nature of the malady that suddenly transfixes the afflicted patient with a dreadful pain over the precordium and extending down the left arm. Is it angina or thrombosis? That is the question. Nitroglycerine or no nitroglycerine? What? Time and hospitalization and laboratory examinations will enable the practitioner to more accurately diagnose the malady. So nitroglycerine may be supplanted by other drugs and its ill effects combated if by chance they occur.

One may yet await more extensive criticism and read with judicial reserve the more frequent notices in medical literature of harmful effects of nitrogen. Particularly important should apprehension of trouble be thought probable in coronary thrombosis with a sudden drop of blood pressure.

**The "Cure" of Syphilis.**

Any discussion of the cure of syphilis claims medical interest. The responsibility of conducting the treatment of syphilis is grave. Fearful and shameful consequences accrue to the patient if adequately treated. On every hand experience of practice offers illustrations of the uncured syphilitic, passing to terminal pathology unchecked. Naturally, years of experience are necessary to reach true values in such therapy. Any thoughtful discussion awakens eager interest of practitioners because the whole question of the cure of syphilis is under serious evaluation and touches the personal responsibility of the practitioner to the syphilitic patient.

The patient comes with the syphilitic lesions or examination discloses positive evidence of specific disease. What plan of treatment offers this patient the best chance for immediate and ultimate security? Touching such a problem, one may find matters of interest in Newcomer's* article. Specific drugs of potency may be had. The cure of the patient, however, results from the interaction of a number of forces. Tissue defense forces contribute and "a lapse of time during which this defense action may evolve is one necessary factor in the cure of the disease." Spirocheticidal action is not the only factor. Hence, Newcomer points out that physicians treating syphilitic patients must keep in mind the relationship between dosage, lapse of time, and therapeutic effect. Deviations from the optimum schedules of treatment can only be judiciously made through clinical experience and judgment. To set up a chart of guidance in such a course of treatment is the main object of Newcomer's paper. Material employed is from the Pennsylvania Hospital. Therapeutic effects are portrayed by two drawings showing surfaces in three dimensions. In the first is found the "therapeutic surface in seropositive, primary and secondary syphilis," and in the second, the "therapeutic surface" in late syphilis. Therein are drawn, vertical lines in three dimensions representing doses of arsphenamine employed; horizontal lines showing years required, and depth lines representing cures in percentage for an average large group of individuals. Intersections of the surface planes give suggestions in doses, time, and percentage factor in cures.

To summarize this suggestive paper, the proper treatment of primary and secondary syphilis requires the administration of thirty to fifty doses of arsphenamine. The doses should be spaced in appropriate courses over a period of one and a half to two years. It is held to give more than fifty in all and to give more than thirty doses in the first year is not advantageous or beneficial. In tertiary syphilis, Newcomer advocates, based on his study, that fifty doses of arsphenamine be given and the best results will be obtained if administrations be made to cover a period of four years—spacing the injections in each course two weeks apart. This "planning" method of treatment requires much of the doctor and much of the patient. The doctor must first orient himself as to the drug, its administration, the great length of time it is to be employed, the deviations from normal in therapeutic tolerance of the drugs and like difficulties. The physician is called upon to so instruct and impress the patient as to the difficulties, dangers, consequencies of the neglect of treatment, and to hold out the possibilities of curing the malady. To obtain the sustained cooperation of the non-institutional patient, it is of utmost importance that frank and candid statement of the situation be made. The patient must know the cruel facts and the patient may be cheered by the favorable experience in percentage of cures when sustained and persistent treatment is carried out through planning of doses and spacing in time for a long period, as advocated in the latest view of syphilologists.

*American Journal Medical Sciences, January, 1933, page 49.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**The Department Urges Pediatric Clinics.**

At its mid-winter meeting the Council of the Medical Society of Virginia restored to the budget of the Department of Clinical Education $200 of the amount which had been deducted from its appropriation for the current year, the deduction having been made without full information about the total expenses involved in the Department.

With these resources, the President of the Society and the Chairman of the Department are seeking the cooperation of the larger local and regional societies in emphasizing a program of pediatric clinics at least once during this year. Promotion of this subject of study is in accordance with the resolution adopted by the Department of Clinical Education at its meeting in February and reported in the last issue of the MEDICAL MONTHLY.

**Eleventh Post-Graduate Clinic at University of Virginia Hospital.**

The regular spring clinic for practicing physicians at the University Hospital, on May 4th and 5th, includes the following program:

THURSDAY, MAY 4TH

10:00 A. M.—Digitalis Therapy, by Dr. J. Edwin Wood.

11:00 A. M.—Surgical Treatment of Tuberculosis, by Dr. E. C. Drash.

2:00 P. M.—Diagnosis of Respiratory Affections, by Dr. L. T. Royster.

3:00 P. M.—Vitamins, by Dr. Alfred Chanutin.

FRIDAY, MAY 5TH

9:00 A. M. and continuing throughout the day—Symposium on Malignant Tumors, by Drs. E. P. Lehman, T. J. Williams, J. H. Neff, F. D. Woodward, W. H. Goodwin and V. W. Archer.

The interest in and attendance upon these post-graduate clinics has been so encouraging as to establish them apparently as a permanent part of the University Hospital's plan of medical education. Physicians throughout the state are cordially invited to attend the meetings.

**Speakers for Society Meetings.**

The Department of Clinical Education has had the privilege during the past month of arranging for speakers to take part in two programs.

At the Clinch Valley Medical Society meeting, at Norton, on April 29th, Dr. Maxwell E. Lapham, Field Clinician of the Medical Society's Joint Committee on Prenatal and Postnatal Instruction, will speak on Home Delivery, with moving picture illustrations; and Dr. C. Bruce Morton, Assistant Professor of Surgery and Gynecology at the University of Virginia, will deal with Some Principles of the Treatment of Peptic Ulcer.

At Staunton, on May 3rd, before the Augusta County Medical Society, Dr. W. W. Waddell, Jr., Assistant Professor of Pediatrics, will speak on Treatment of Diarrhoea in Children, and Dr. H. B. Mulholland, Associate Professor of Medicine, on the subject of Heart Conditions Especially from the Standpoint of the General Practitioner. Both of these speakers are from the University Hospital.

**Spring Clinic at the Medical College of Virginia.**

On March 22nd and 23rd a series of clinics at the Medical College of Virginia included those in Pediatrics, by Drs. Sam Anderson, Jr., L. E. Sutton, Jr., and F. J. Wampler; in Obstetrics, by Drs. H. H. Ware and Greer Baughman; in Surgery, by Drs. I. A. Bigger, D. Faulkner, G. Paul LaRoque, C. C. Coleman, and in Medicine, by Drs. Manfred Call, James Smith, W. A. Shepherd, W. H. Higgins and J. M. Hutcheson. Each afternoon round-table discussions and ward rounds were held.

The doctors attending expressed themselves as much pleased with the clinics and faculty members felt they were instructive. It is obviously a fact, however, that a larger number of physicians should have taken advantage of this opportunity, and it remains a problem of the Department of Clinical Education to devise means of interesting other practitioners of the state in such clinics as these.

The list of physicians registered for the clinic follows:

DOSWELL—Dr. J. A. Wright

DUMBARTON—Dr. Herbert W. Lewis

Floyd—Dr. R. M. DeHart
Glen Allen—Dr. J. H. Winfrey
Hillsville—Dr. R. R. Goad
Hopewell—Dr. S. E. Gunn
Dr. F. M. Howell
Jetersville—Dr. James M. Habel
Keysville—Dr. J. B. Bailey
Kilmarnock—Dr. E. R. Moorman
Louisa—Dr. H. S. Daniel
Midlothian—Dr. J. B. Fisher
Newport News—Dr. E. L. Alexander
Dr. W. R. Payne
Petersburg—Dr. H. Cantor
Richmond—Dr. J. J. Anderson
Dr. S. J. Baker
Dr. J. C. Blanton
Dr. W. F. Drewry
Dr. H. B. Hinchman
Dr. G. R. Maloney
Dr. Louis Perlin
Dr. R. F. Simms
Dr. H. U. Stephenson
Roanoke—Dr. W. R. Whitman
Sandy River—Dr. J. E. Richardson
Surry—Dr. B. H. Knight
Williamsburg—Dr. J. R. Tucker

## Joint Committee on Prenatal and Postnatal Instruction.

### Second Year's Program Assured

The Joint Committee has the happy privilege of reporting the generous act of the Commonwealth Fund in not only continuing the tentative grant for prenatal and postnatal instruction but increasing the funds orginally reserved for that purpose. The letter of Miss Barbara S. Quin, Assistant Director of the Fund, to Dr. Lee E. Sutton, Jr., Chairman of the Joint Committee, is as follows:

"It gives me great pleasure to advise you that at the meeting of our Board, held yesterday (April 18th), the following action was taken in connection with the courses on post-graduate prenatal and postnatal instruction: (1) the balance of $2,500 remaining from the first year's appropriation was made available for the work of the second year; (2) the reservation of $5,000 was appropriated, to be paid to such extent as may be required.

"Everyone was exceedingly gratified at the excellent results of the first year's work, and we most sincerely hope that the second year will be equally encouraging, as we haven't the slightest doubt it will."

### Virginia Attracts Outside Attention

Post-graduate prenatal and postnatal instruction in Virginia will be presented by invitation of the New York Maternity Center Association at a luncheon at the Waldorf-Astoria on May 12th.

Very fittingly this report on the Medical Society's state-wide educational program will be made by Dr. J. Allison Hodges, a founder and first chairman of the Department of Clinical Education, and a prime mover from the beginning in the establishment of the Joint Committee and in the conduct of its work. Dr. Hodges also reports several large conference groups and two state societies have written him for information, and the White House Conference on Child Health and Protection has also studied Virginia's effort.

### Post-Graduate Courses in Southwest Virginia

The cumulative effect of the program of intensive post-graduate instruction in prenatal and postnatal care was abundantly illustrated in the general eagerness of the physicians of Southwest Virginia to organize groups for Dr. Lapham's courses during the summer. During the week of March 20th-25th, the Secretary of the Joint Committee visited meetings of five county medical societies and three groups of interested physicians; all the meetings except one were especially called to discuss the organization of these classes. From these discussion ten classes have resulted, so that the Joint Committee is justified in tentatively assigning its Field Clinician to the one section of the state for twenty consecutive weeks.

The organization meetings were generally small, as these organization meetings habitually are—a great many more physicians will enroll for a class of study than will appear to arrange for a class. Everywhere, however, the most whole-hearted cooperation was in evidence, a fact which may be demonstrated by the statements that every physician practicing obstetrics except one enrolled for the classes and at least a dozen more than were present enrolled by proxy.

The arrangement of the Southwestern circuits, with centers and days of meeting, local committees in charge of the courses, and advance enrollments, are as follows:

### Fifth Circuit

Fremont or Clintwood: The class meets on Mondays, beginning May 1st. Local committee in charge of membership and clinical material: Chairman, Dr. J. C. Moore, Drs. R. L. Phipps and J. S. Richardson. Advance enrollments: Drs. J. C. Moore and R. L. Phipps.

Norton: The class meets on Tuesdays, beginning May 2nd, at 1:00 P. M., in the Post Office Building. Local committee: Chairman, Dr. F. S. Givens, Drs. T. J. Tudor and W. R. Culbertson. Advance enrollments: Drs. E. P. Cox, W. R. Culbertson, G. T. Foust, F. S. Givens, C. L. Harshbarger, N. W. Stallard, T. J. Tudor.

Stonega: The class meets on Wednesdays, beginning May 3rd, at 10:00 A. M., in Stonega Hospital. Local committee: Chairman, Dr. J. H. Hagy, Drs. F. E. Handy and William A. Baker. Advance enrollments: Drs. J. H. Hagy, S. H. Rivers, C. B. Bowyer and the six other members of his staff.

Gate City: The class meets on Thursdays, beginning May 4th. Local committee: Chairman, Dr. J. M. Dougherty, Jr., Drs. A. McG. Wallace and H. K. McConnell. Advance enrollments: Drs. J. M. Dougherty, Jr., V. W. Quillen and A. McG. Wallace.

Pennington Gap: The class meets on Fridays, beginning May 5th, at 2:00 P. M., in the High School Building. Local committee: Chairman, Dr. J. B. Muncy, Drs. C. H. Henderson, T. B. Ely and W. J. Innes. Advance enrollments: Drs. D. O. Hamblin, C. H. Henderson, T. H. Hutchinson, W. J. Innes, J. B. Muncy and M. B. Payne.

### Sixth Circuit

Tazewell: The class will meet on Mondays, beginning July 10th. Local committee: Chairman, Dr. P. D. Johnston, Drs. J. N. Higginbotham, J. P. Williams, H. B. Frazier and W. H. Ballard. Advance enrollments: Drs. M. J. Alexander, J. N. Higginbotham, W. I. Painter, Isaac Peirce and Frank Pyott.

Lebanon: The class will meet on Tuesdays, beginning July 11th. Local committee: Chairman, Dr. R. F. Gillespie, Drs. P. J. Bundy and W. C. Elliott. Advance enrollments: Drs. P. J. Bundy, S. C. Couch, W. C. Elliott, R. F. Gillespie and C. P. Greear.

Bristol: The class will meet on Wednesdays, beginning July 12th. Local committee: Chairman, Dr. W. K. Vance, Jr., Drs. T. R. Bowers, C. W. Fleenor and E. H. Hearst. Advance enrollments: Drs. T. R. Bowers, A. J. Edwards, C. W. Fleenor, E. H. Heart, George G. Keener, M. G. Rock, W. H. Teeter, D. D. Vance and W. K. Vance, Jr.

Abingdon: The class will meet on Thursdays, beginning July 13th. Advance enrollments: Drs. L. F. Cosby, H. M. Hayter, L. M. Hines, D. F. Kinsolving, R. L. Hillman, H. W. Smeltzer, J. A. Soyars.

Marion: The class will meet on Fridays, beginning July 14th. Local committee: Chairman, Dr. A. B. Graybeal, Drs. T. K. McKee and G. D. Pettit. Advance enrollments: Drs. E. A. Holmes, R. D. Campbell, Z. V. Sherrill and C. A. C. Sherrill.

### Dr. Lapham's Short Course in Bedford

All of the ten physicians in Bedford county (one other had joined the Lynchburg class in prenatal and postnatal care last spring), enrolled for the intensive two weeks' course Dr. Lapham conducted from April 10th to 21st. During the first week one was prevented from coming; but the other nine, in spite of the strenuous nature of a course that superimposes a two-hour meeting every day upon the usual duties, had achieved through the first half of their work a higher average of attendance than for any previous group, 86.7 per cent.

### Fourth Circuit Has a Good Ending

The tangible facts upon which the Joint Committee can base a judgment of the success of its program are of two kinds, attendance and comment of members. The attendance for the fourth circuit, as presented in the table below, shows that each of seventy-five physicians attended, on the average, three-fourths of the meetings; but if really complete records could be made, the actual attendance rate would be much higher. There is, for instance, no allowance for cases of necessary absence on the part of members. Still more troublesome is the determination of bona-fide members. The Norfolk class rate would have been increased by 20 per cent, and the rate for the circuit would have been raised six points, if four members who enrolled but attended only one meeting, had been disregarded.

There is no possible doubt to be cast upon the favorable response of members to the Joint Committee's request for a frank expression of opinion as to the value of the course. Each of thirty-two replies rated the lectures as excellent or good, and declared the course had been worth the cost in time and money; all except one avowed an interest in future similar courses in other branches, and seventeen marked

the clinics as excellent or good, while twelve marked them as fair or passable, usually explaining that there was a lack of clinical material for which the instructor could not be blamed.

The figures on enrollment, average attendance and percentage of attendance for the classes of the fourth circuit are as follows:

| | Enrolled Members | Average Attendance Including Visitors | Per Cent Attendance of Members |
|---|---|---|---|
| Suffolk | 10 | 11.3 | 85.0 |
| Franklin | 7 | 5.7 | 72.9 |
| Portsmouth | 16 | 14.2 | 81 9 |
| Norfolk | 26* | 19.8 | 67.1 |
| Norfolk (Colored) | 18 | 13.5 | 70.6 |
| Total | 77* | 64.5 | 74.5 |

*Two enrolled members, one of whom paid the fee but neither of whom attended, are included in the total enrollment but omitted in the computation of percentage of attendance.

### What the Members Think

To date the scoring of comment in regard to the value of the courses in prenatal and postnatal care shows the following results: 163 of 168 replies consider the lectures either excellent or good; 80 of 150 replies consider the clinics either excellent or good; 155 of 160 replies consider the course worth the cost in time and money; 153 of 159 replies assert interest in future courses in other subjects.

George W. Eutsler,

*Secretary of the Department,*

*and of the Joint Committee.*

# Proceedings of Societies

### Norfolk County Medical Society All-Day Clinic.

The Annual All-Day Clinic of the Norfolk County Medical Society, held on Wednesday, April 12th, proved as successful as was to be expected in the light of previous occasions of the same nature. Unfortunately a very heavy rain in the early morning undoubtedly prevented a much larger attendance of physicians from outside points; but, as it was, there were many from adjacent districts in Virginia and North Carolina, while, as a matter of course, the profession in Norfolk and Portsmouth was very largely in evidence.

One admirable feature was the same promptitude and rigid adherence to time limits that has characterized all of the similar clinics sponsored by the Society. This is essential where a full program is provided, but is too often disregarded. The Chairmen have always been requested in these Clinics to adhere strictly to the printed program, and their complete compliance with this request has added materially to the success that has attended the movement.

The excellent program was followed absolutely, not a single failure to follow the detailed arrangement occurred. No subject presented lacked practical interest, though of course some were especially outstanding. The general verdict was that the day was one of more than ordinary helpfulness to all attending. It has always been the aim to provide a program dealing with every-day problems rather than with extraordinary conditions.

It is the expectation of the Society to present similar Clinics annually.

On the social side, the luncheon provided by St. Vincent's Hospital and the buffet supper at the Norfolk Country Club, were greatly appreciated, affording opportunity for friendly intercourse.

The address of Dr. Harold L. Amoss, of Duke University, on the Treatment of Streptococcic Pneumonia, was instructive and much enjoyed by the large gathering of physicians. Dr. Amoss will be a welcome visitor at any time in future.

The committee in charge of this year's clinics was: Dr. C. J. Andrews, Dr. F. C. Rinker, Dr. Julian L. Rawls, Dr. Wm. Lett Harris, and Dr. Walter B. Martin.

### The Roanoke Academy of Medicine

Held its regular meeting at the Roanoke Hospital on April 10th. The program was in charge of Dr. John O. Boyd and the following papers were presented by members of the hospital staff:

Hereditary Deforming Chrondrodysplasia. Dr. Chas. H. Peterson.

(1) Congenital Absence of Clavicles. Case Exhibit.

(2) Fracture of Spinous Process of Cervical Vertebra by Muscular Contraction. Dr. Wm. C. Stephenson.

Congenital Heart Disease. Case Exhibit. Dr. J. E. Gardner—Dr. W. H. Saunders.

Clinical Experience with Recurrent Lithiasis. Illustrated by lantern slides. Dr. L. D. Keyser.

Vesical Calculus in Child, with Bilateral Hydronephrosis. Dr. George Johnson—Dr. T. D. Armistead.

Congenital Syphilis. Dr. J. M. Bishop.

Clinical Interpretation of Schilling Blood Count. Dr. H. M. Escue.

Clinical Observations in Pulmonary Tuberculosis. Dr. Fred Oast.

A New Method for the Internal Fixation of Transcervical Fractures of the Femur. Illustrated by motion pictures. Dr. H. H. Wescott.

Dr. R. H. Garthright, of Vinton, Va., read "An Autobiography of a Physician's Saddle Bags." This paper was written on the occasion of the presentation to the Medical College of Virginia's Museum of Dr. Garthright's saddle bags, which he used for many years.

Dr. George M. Maxwell read a poem which supplemented Dr. Garthright's excellent paper.

**The Southwestern Virginia Medical Society**

Held its regular semi-annual meeting at Pulaski, Va., on March 24th, with an attendance of sixty-five members. There were two sessions, starting with a luncheon meeting. At this time there was a symposium on Breast Cancer, with papers by Drs. H. M. Hayter, of Abingdon; H. W. Bachman, of Bristol; Beverley F. Eckles, of Galax, and J. T. McKinney and H. H. Trout, of Roanoke. Dr. K. D. Graves, of Roanoke, presented a paper on Heart Pain. There was a banquet at 7 P. M. Following an address of welcome by the mayor, with response by Dr. O. A. Weatherly, of Radford; Dr. M. E. Lapham, working in Virginia, under the auspices of the Joint Committee on Prenatal and Postnatal Instruction of the State Society, gave an address on Home Delivery, with movie illustrations.

Dr. J. A. Noblin, East Radford, is president, and Dr. H. W. Bachman, Bristol, secretary-treasurer.

**The Northampton County Medical Society**

Held its regular quarterly meeting on April 5th, at the Eastville Inn, Eastville, Va. Dr. E. W. P. Downing gave a paper on his Reminiscences of Forty-eight Years of Practice. Dr. John Hamilton gave a report of the Committee on Cost of Medical Care.

Dr. W. Carey Henderson and Dr. W. T. Green, both of Nassawadox, are president and secretary, respectively.

# News Notes

**Dates Selected for State Meeting.**

The Lynchburg Academy of Medicine, Inc., has confirmed the dates of October 24th, 25th and 26th, tentatively selected by the Council of the Medical Society of Virginia, for its 1934 meeting, in Lynchburg.

It is hoped that all members will look ahead in making plans for vacations, so as to include the State meeting. Lynchburg is in a beautiful section of the State and should be most attractive at the time of our meeting.

**Milwaukee Meeting of the A. M. A.**

The American Medical Association is to have its annual meeting in Milwaukee, Wis., June 12th-16th, under the presidency of Dr. E. H. Cary, of Dallas, Tex. The House of Delegates will convene on the 12th and the Scientific Assembly will open with the general meeting on the evening of the 13th, at 8:30 P. M.: The House of Delegates will have its sessions in the Grand Ballroom of Hotel Schroeder. Virginia's delegates this year are Dr. Southgate Leigh, Norfolk; Dr. Warren F. Draper, Richmond, and Dr. Dudley C. Smith, University.

The Woman's Auxiliary to the A. M. A. will have interesting sessions and attractive entertainments. The full program for this organization appeared in the April issue of the MONTHLY.

**Our State Society Honored**

The educational work of the Medical Society of Virginia, in its Department of Clinical Education and Prenatal and Postnatal Ininstruction is being studied by several State medical societies and Health Conference groups at this time. The latest request for details is from the New York Maternity Center Association, that "the state-wide educational program your Society is sponsoring be presented at a maternity education luncheon at the Waldorf-Astoria on May 12th." The speakers on that occasion will be Mrs. Franklin D. Roosevelt, Dr. Walter Chipman, of Montreal: Dr. Linsly Williams, of the New York Academy of Medicine, and Dr. J. Allison

Hodges, of Richmond, representing the Medical Society of Virginia, as one of the organizers of this movement in our state.

**Tuberculosis Abstracts.**

Abstracts from an article by Dr. J. Arthur Myers, which appeared in the *American Review of Tuberculosis*, February, 1933, are reprinted on a sheet which appears as a supplement to this issue of the VIRGINIA MEDICAL MONTHLY.

This article on examining tuberculosis contacts is very timely at the season, when the Virginia Tuberculosis Association and its local branches are joining in the nation-wide "Early Diagnosis Campaign." This campaign brings the subject of tuberculosis before countless groups with talks and literature urging the medical examination of tuberculosis contacts.

The Virginia Tuberculosis Association reports that it is receiving the hearty support and co-operation of the medical profession in this educational movement in various sections of the State.

**The Virginia Society of Oto-Laryngology and Ophthalmology**

Is to hold its annual meeting in Harrisonburg, Va., May 6th, starting at 9:30 A. M. The guests of honor will be Dr. Samuel Joseph Kopetsky, of New York, who will talk on "Problems Concerned with Petrositis," and Dr. Thomas D. Allen, of Chicago, whose subject will be "Dissecting Blebs Following Fistualization Operations." Dr. Frank P. Smart, Norfolk, is President, and Dr. H. Grant Preston, Harrisonburg, Secretary.

The date was selected with the hope that it would be near time of the Apple Blossom Festival and also that it would be possible for members to attend the meetings of the American Ophthalmological and American Otological Societies in Washington, D. C., on May 8th.

**Married.**

Dr. Hawes Campbell, Jr., of the class of '32, Medical College of Virginia, and Miss Ellen James Hudgens, Richmond, April 14th. Dr. Campbell is at present serving an internship at Johnston-Willis Hospital, Richmond.

Dr. Wilmore R. Sherrick and Mrs. Helen Crouch Long, both of Richmond, March 25th.

Dr. Irwin Clay Hanger, son of Mr. and Mrs. Franklin M. Hanger, of Staunton, Va., and Miss Sarah Baldwin, of Cleveland, O., April 8th. Dr. Irwin Hanger has been located in Cleveland for some time and is connected with the staff of the Lakeside Hospital in that city.

Dr. Lawrence Lincoln Beall, Durham, N. C., and Miss Virginia Graham McLean, Cleveland, Miss., April 16th. Dr. Beall is an alumnus of the Medical College of Virginia, class of '31, and later interned at Union Memorial Hospital, Baltimore.

**The West Virginia State Medical Association**

Is to hold its annual meeting in Charleston, May 22nd-24th, under the presidency of Dr. D. A. MacGregor, of Wheeling. There will be several out-of-state speakers and indications are that this will be a most successful meeting, both socially and scientifically.

**Richmonders Attend Southern Society of Clinical Surgeons.**

Dr. I. A. Bigger, Dr. John S. Horsley, Jr., and Dr. Carrington Williams, of Richmond, attended the seventh annual meeting of the Southern Society of Clinical Surgeons in Boston, April 3rd, 4th and 5th.

**The Medical Association of the Valley of Virginia**

Is to hold its next meeting in Clifton Forge, Va., on May 25th, and an interesting program is promised. Dr. H. Grant Preston, Harrisonburg, is president, and Dr. Alex. F. Robertson, Jr., Staunton, secretary.

**Correction.**

Dr. W. R. Bond, Richmond, a contributor to the April, 1933, issue of the MONTHLY, has called attention to an error occurring in his paper, The Treatment of Acute Arsenic Poisoning, appearing in that number.

In Mortality Table V, the antidote appears as sodium thiosulphate. This should read sodium *hydrosulphite*. The nomenclature of these compounds is quite unfortunate, and sodium hydrosulphite must be clearly differentiated from the thiosulphate or hyposulphite. The hydrosulphite precipitates with arsenous compounds the relatively non-toxic subsulphide of arsenic, while thiosulphate yields at first the thiosulphate of arsenic, which is equally as toxic as the original arsenic preparation.

**Dr. E. Terrill Montgomery**

Has located for the practice of medicine in New York City, with offices at 19 West 55th Street. He is a native of Richmond, and graduated from the Medical College of Virginia in 1930, following which he served an intern-

ship at the U. S. Marine Hospital, in New Orleans, La.

**News from the University of Virginia, Department of Medicine.**

On March 6th, Dr. Bruce Morton spoke before the Roanoke Academy of Medicine, on End Results of Treatment of Peptic Ulcer.

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Dr. Edwin P. Lehman served as Visiting Professor of Surgery at the Emory Medical College from March 13th to 18th.

On April 14th, Dr. Lehman read a paper on Sympathetic Syndromes of the Extremities, before the meeting of the Ohio County Medical Society, in Wheeling, W. Va.

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On February 14th, Dr. J. Edwin Wood spoke before the County Medical Society in Danville, Va., on the subject of Clinical Detecton and Management of the Cardio-Vascular Irregularities.

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On March 20th, Dr. Walter B. Cannon, Professor of Physiology at the Harvard Medical School, gave a lecture on his recent experimental work which led to his discovery of Sympathin.

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The William Webster Root Memorial Alpha Omega Alpha Lecture, was delivered on the occasion of the annual initiation of new members on April 14th, by Dr. A. N. Richards, Professor of Pharmacology at the University of Pennsylvania. The subject of the lecture was Microchemical Study of Renal Function.

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Dr. J. Shelton Horsley, Richmond, has been elected an alumnus member of the Sugma Xi national society, for the promotion of scientific research at the University of Virginia.

Dr. Vincent W. Archer, of the University faculty, was also given membership.

**News Notes from the Medical College of Virginia.**

Dr. Stuart McGuire and President W. T. Sanger represented the college at a meeting of the West Virginia alumni in Charleston, W. Va., April 11th. Despite the heavy rains, fifty-three were present at this meeting. Dr. S. W. Price, of Scarboro, W. Va., was elected president; Dr. Roy Miller, of Parkersburg, W. Va., vice-president, and Dr. W. L. Cook, of Charleston, W. Va., secretary. It is planned to have one general meeting of the West Virginia alumni annually.

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The number of patients for the outpatient department for March totalled 6,569, which is the largest month in the history of the clinic. The greatest number of patients for any one day was 300, which is also a record for the clinic.

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Dr. Richard C. Cabot, of the medical school of Harvard, spoke to the students of the college April 4th. His subject was "Truth in Medicine."

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Mr. Harold Beamer, of Pulaski, Va., a graduate of the school of pharmacy '32, was a recent visitor to the college.

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Dr. J. C. McCracken, Professor of Surgery and Dean of the Medical Department, Saint John's University, Shanghai, China, was an interesting visitor recently.

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Dr. Sidney S. Negus, Mr. R. F. McCrackan, Dr. J. C. Forbes, Dean Wortley F. Rudd, and Dr. W. G. Crockett, of the Department of Chemistry, attended the annual spring meeting of the American Chemical Society, Washington, D. C., March 27th-30th.

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Alumni visiting the college during March were Dr. C. C. Cochran, '21; Dr. R. W. Holley, '99; Dr. Ennion S. Williams, '30.

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Dr. H. B. Haag and Dr. R. J. Main attended the meetings of the American Physiological Society and American Society for Pharmacology and Experimental Therapeutics in Cincinnati, O., April 10th-15th.

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Dr. Everett Ingersoll attended the meetings of the American Anatomical Society in Cincinnati, April 12th-15th. Dr. Ingersoll presented a paper at this meeting on his study of sympathetic nerve cells.

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Approximately 175 students will receive diplomas at the close of the present academic year. The commencement exercises will be held from May 27th to 30th, with Dr. Julian Burruss, President of the Virginia Polytechnic Institute, delivering the commencement address on the last day.

**Dr. Charles M. Walthard,**

Of Berne, Switzerland, Lecturer in Neurology at the University of Zurich, has been a recent visitor to Dr. John S. Horsley, Jr., and Dr. Guy Horsley, of Richmond.

**Faculty and Staff Meeting, Medical College of Virginia.**

Dr. I. A. Bigger, Chairman, announces that the regular scientific monthly meeting of the Faculty and Staff of the Medical College of Virginia will be held on Thursday, May 4, 1933, at 8:15 P. M., in the auditorium of Cabaniss Hall. The program will be as follows:

1. "The Amplification and Registration of Heart Sounds"—Dr. W. R. Bond.
2. "The Relation of the Anatomy and Physiology of the Bladder to Frequency of Urination"—Dr. A. I. Dodson.

**Dr. John M. Bailey,**

Formerly of Hopewell, Va., having completed the necessary requirements for the degree of Master of Science in Internal Medicine at the Post-Graduate School of Medicine of the University of Pennsylvania, Philadelphia, has located in Richmond, Va., with offices in the West End Medical Building. He will be engaged in the practice of cardiology and gastroenterology.

**Dr. F. M. Leech,**

Lexington, Va., was recently elected President of the Tribrook Golf and Tennis Club of that place, for the coming year.

**Additional Books Available to Members of Medical Society of Virginia.**

In addition to books listed in last issue of the Monthly, the following, all received since the beginning of 1930, are in the Library of the Medical College of Virginia. They may be borrowed by members of the Society at any time, the only cost being return postage. A number of our readers have already availed themselves of this service:

*Allen, Edgar*—Sex and the Internal Secretions.
*Angell, Norman*—The Story of Medicine.
*Bagby, English*—The Psychology of Personality. An Analysis of Common Emotional Disorders.
*Beatty, R. T.*—Hearing in Man and Animals.
*Beck, Dorothy Fahrs*—The Cost of Equipping a Dental Office.
*Beekman, Fenwick*—Office Surgery.
*Benedict, Francis G.*—The Physiology of Large Reptiles. (Carnegie Inst. pub.)
*Blacklock, John W. S.*—Tuberculous Disease in Children.
*Bolam, T. R.*—The Donnan Equilibria.
*Bradley, Alice V.*—Tables of Food Values.
*Castle, W. E.*—Contributions to the Genetics of the Domestic Rabbit.
*Castle, W. E.*—Genetics and Eugenics.
*Crossen, Harry Sturgeon & Crossen, Robt. James*—Synopsis of Gynecology.
*Daniel, Robt. P.*—A Psychological Study of Delinquent and Non-Delinquent Negro Boys.
*Davenport, Chas. B.*—The Genetical Factor in Endemic Goiter.
*Dobell, Clifford*—Antony Van Seevwenhock and His "Little Animals."
*Engelbach, Wm.*—Endocrine Medicine.
*Epstein, Harry B.*—William Shakespeare, M. D.
*Fishberg, Arthur M.*—Hypertension and Nephritis.
*Gates, Arthur I.*—Psychology for Students of Education.
*Goldsmith, G. W. & Hofenriehter, A. L.*—Anthokinetics—The Physiology and Ecology of Floral Movements.
*Gunn, J. A.*—An Introduction to Pharmacology and Therapeutics.
*Harris & Finesilver*—Normal Facts in Diagnosis.
*Heinrich, H. W.*—Industrial Accident Prevention.
*Hiscock, Ira V.*, editor—Community Health Organization.
*Hogben, Lancelot*—Genetic Principles in Medicine and Social Science.
*Hoskins, R. G.*—The Tides of Life.
*Hutton, Isabel Emslie*—The Sex Technique in Marriage.
*Jensen, Deborah MacLurg*—Student's Handbook on Nursing Case Studies.
*Keith, Arthur*—The Antiquity of Man.
*Koch, Robt.*—The Aetiology of Tuberculosis.
*Krafft, Carl F.*—Can Science Explain Life?
*Krafft, Carl F.*—The Mechanistic Autonomy of Nature.
*Lewis, Thomas*—Diseases of the Heart.
*Logie, H. B., ed.*—A Standard Classified Nomenclature of Disease.
*Lower, Richard*—De Corde (London 1669) Oxford Univ. Press, 1932.
*Lynch, Kenneth M.*—Protozoan Parasitism.
*Lynde, Carleton John*—Everyday Physics.
*Maranon, Gregorio*—The Climacteric.
*McDowall, R. J. S.*—The Science of Signs and Symbols.
*McPheeters, H. O.*—Varicose Veins.
*Medical Research Council*—Third Report of the Miner's Nystagmus Committee.
*Miller, C. Jeff*—Clinical Gynecology.
*Miller, C. Jeff*—An Introduction to Gynecology.
*Moek, Harry E., et als., eds.*—Principles and Practive of Physical Therapy.
*Moll, Albert*—The Sexual Life of the Child.
*Moss, Fred A.*—Psychology for Nurses.
*Munby, Alan E.*—Laboratories. Their Plannings and Fittings.
*Needham, Dorothy Moyle*—The Biochemistry of Muscle
*New Pharmaceutical Syllabus, The.*
*Noyes, Wm. Albert*—Modern Alchemy.
*Parsons, Robt. P.*—History of Haitian Medicine.
*Paullin, Chas. O.*—Atlas of the Historical Geography of the U. S.
*Piney, A.*—Recent Advances in Haematology.
*Pintner, Rudolph*—Educational Psychology.
*Pitkin, Walter B.*—Life Begins at Forty.
*President's Research Committee on Social Trends*—Recent Social Trends in the U. S.
*Prinzhorn, Hans*—Psychotherapy.
*Pusey, Wm. Allen*—The History of Dermatology.
*Simpson, Clarence O.*—Advanced Radiodontic Interpretation.

*Small, Lyndon*—Chemistry of the Opium Alkaloids.
*Swenson, Merrill G.*—Outline of Full Denture Prosthesis.
*Vallery-Radot-Pasteur*—L'Asthme Bronchique
*Wagoner, Geo. & Custer, R. Philip*—A Handbook of Experimental Pathology.
*Walsheil, Arthur John*—Abdominal-Pelvic Diagnosis in Women.
*Watt, John Mitchell*—The Medicinal and Poisonous Plants of Southern Africa.
*White House Conference on Child Health and Protection*—
Body Mechanics.
Hospitals and Child Health.
Health Protection for the Pre-School Child.
Nutrition Service in the Field
Obstetric Education.
Psychology and Psychiatry in Pediatrics: The Problem.
*Worms, G. & neé J. M.*—Les foyers amygdaliens.

The following list pertains entirely to "Economics":

*Adams, A. B.*—Economics of Business Cycles.
*Angell, Norman*—The Story of Money.
*Bogart, E. L.*—Economic History of the American People.
*Bradford, F. A.*—Banking.
*Bradford, F. A.*—Money.
*Chase, Stuart*—A New Deal.
*Edie, L. D.*—Money. Bank Credit, and Prices.
*Ely, R. T.*—Outlines of Economics.
*Faulkner, H. U.*—American Economic History.
*James, Cyril*—The Economics of Money, Credit and Prices
*Lincoln, E. E.*—Applied Business Finance.
*Lutz, H. L.*—Public Finance.
*Mitchell, Broadus*—A Preface to Economics.
*Moulton, Harold*—The Financial Organization of Society.
*Rodkey, R. G.*—The Banking Process.
*Smith, Adam*—Wealth of Nations.
*Taussig, F. W.*—Principles of Economics.
*Tugwell, Munro & Stryker*—American Economic Life.
*Willis & Beckhart*—Foreign Banking Systems.

### The American Board of Obstetrics and Gynecology

Will hold its next general, clinical examination in Milwaukee, June 13th, the first day of the meeting of the American Medical Association. The annual dinner and Round Table Conference will be held on the following evening. For further information and application blanks, address the Secretary, 1015 Highland Building, Pittsburgh, Pa.

### Merck's New Research Laboratory Dedicated.

Sir Henry Dale, Director of the National Institute for Medical Research of England, a fellow of the Royal College of Physicians, and one of the world's leading authorities on Pharmacology, was the principal speaker at the dedication of the new Merck Research Laboratory, which took place at Rahway, N. J., on April 25th. Other guests of honor were: Mr. Lamont du Pont, President of E. I. du Pont de Nemours & Co., Inc., representing Chemistry and the Chemical Industry; Mr. J. K. Lilly, of Eli Lilly & Co., representing Pharmacy and the Pharmaceutical Industry; Surgeon-General Hugh S. Cumming, of the U. S. Public Health Service, representing Medicine and the Public Health Service; and Governor A. Harry Moore, representing the State of New Jersey. Over three hundred leaders in medicine and chemistry of the country were present at the dedication.

The Merck Research Laboratory, just completed at a cost of $200,000, is considered one of the most modern of its kind in the world.

### Dr. Percy Paul Pharr,

Of the class of '27, Medical College of Virginia, recently of Lillybrook, W. Va., has located at Alderson, W. Va.

### Dr. Frederick Pilcher, Jr.,

Of the class of '29, University of Virginia, Department of Medicine, recently returned from studying in Vienna, and has just begun a fellowship with the Mayo Foundation, Rochester, Minn.

### Dr. W. A. Reese,

Petersburg, Va., was in April re-elected Eminent Commander of the Appomattox Commandery, No. 6, Knights Templar, to serve for the coming year.

### Virginia Doctors Visit in Florida.

Dr. and Mrs. S. E. Massey and daughter, Caroline, returned to their home in Amonate, Va., the first of April, after a month's vacation at Miami Beach.

Dr. and Mrs. J. Kennedy Corss, Newport News, Va., have been spending some time at Miami.

Dr. C. B. Bowyer, Stonega, Va., is home again after a pleasant vacation in Florida.

Dr. D. Hunter Marrow and family, after spending the winter at Daytona Beach, have returned to their home in Boydton, Va., for the summer months.

### The Annual Report of St. Elizabeth's Hospital,

Richmond, Va., for 1932, has just appeared. It shows 1,190 patients during the year 1932. There were twenty-three deaths among the operative cases, none among the surgical non-operative cases, one among the urological cases, and thirteen among the medical cases, making the total number of deaths thirty-seven and the mortality rate for all deaths 3.10 per cent,

as compared with forty-two deaths in 1931 and a mortality rate of 2.85 per cent. The mortality rate for operative surgical patients for 1932 was 3.34 per cent, as compared with 2.66 per cent for 1931.

Appended to the report and constituting an interesting feature of it is a synopsis of all deaths, including remarks upon the cases and a brief report of the necropsies. Twenty-five necropsies (67.57 per cent-100 per cent of the surgical cases) were done, as compared with seventeen necropsies (40.47 per cent-66.23 per cent of the surgical cases) in 1931.

There were 1,031 anesthesias during 1932, of which there were thirty-six spinal, 440 local, fifty-three straight ether, 257 straight ethylene, 216 ethylene combined with ether, local or avertin, and 225 operations in which avertin was used.

The out-patient department reports the handling of 1,440 cases during 1932, including dressings, examinations and treatments.

There were 806 ultraviolet ray treatments given, 301 basal metabolism examinations, ninety electrocardiograms, and 546 microscopic tissue examinations.

**The Virginia Hospital Association,**

Meeting jointly with the associations of North and South Carolina, in Charleston, S. C., early in April, elected Dr. W. T. Sanger, of the Medical College of Virginia, Richmond, President of the Virginia organization; Miss Virginia Thacker, Roanoke, Vice-President, and Dr. Lewis E. Jarrett, Richmond, Secretary-Treasurer. The combined organizations had an excellent meeting with an attendance of about three hundred and twenty-five.

The Tri-State Federation will hold its 1934 meeting in North Carolina next Spring.

**Officers In Rotary Club.**

Dr. A. D. Hutton was recently elected treasurer and Dr. George A. Wright one of the directors of the Rotary Club of Marion, Va.

**Mother's Day.**

"Make Motherhood Safe for Mothers" is the slogan of the Maternity Center Association for Mother's Day, on May 14th. At least half of the 16,000 annual deaths in maternity are preventable and ought to be prevented, is the claim of the Maternity Center, and so plans have been made from coast to coast to devote the week just preceding Mother's Day to crystallizing public opinion on the vital need of improving maternity care.

**Dr. W. L. Varn,**

South Hill, Va., was in April elected president of the Rotary Club of that place for the coming year.

**The American Public Health Association,**

Foremost sanitary organization in the United States, announces its sixty-second annual meeting, to be held in Indianapolis, Ind., October 9-12, 1933.

It was at the meeting of this Association in Indianapolis in 1900 that Dr. Walter Reed read a paper entitled "The Etiology of Yellow Fever—A Preliminary Note," indicating that the mosquito serves as the intermediate host for the parasite of yellow fever. History was being made in the Old German House that day, yet it is reported by some of those present that the epochal report was received with only mild interest. At this year's meeting it is planned to honor the only living participant in the famous Yellow Fever Experiment, Dr. John R. Kissinger, at a special memorial session.

The scientific program will discuss every aspect of modern public health practice, from the viewpoint of the health officer, the laboratory worker, the epidemiologist, the child hygienist, the industrial hygienist, the nurse, the vital statistician, the health educator, the food and nutrition expert, the sanitary engineer. Distinguished scientific pronouncements may be expected from the outstanding personalities in the public health profession who will contribute to the program.

The American Public Health Association, 450 Seventh Avenue, New York City, will be glad to send more complete information about its Indianapolis meeting, to anyone interested.

**American Congress of Radiology.**

The Radiological Society of North America, the American Roentgen-Ray Society, the American College of Radiology, and the American Radium Society appointed representatives to formulate plans for an American Congress of Radiology, to be held in Chicago, September 25-30, 1933, at the time when it is expected that the Century of Progress Exposition will be at its best. Dr. Henry K. Pancoast, of Philadelphia, is president of the Congress. The scientific sessions and scientific and commercial exhibits will be at the Palmer House. This promises to be a gath-

ering of unusual interest. Further information in regard to the Congress may be obtained from permanent headquarters and business office of the Executive Council and Administration, at 2561 North Clark Street, Chicago.

**For Sale—**

New post-cautery complete with one knife. $25.50 net, cash. Address A. B. C., care the Virginia Medical Monthly, 1200 East Clay Street, Richmond, Va. (*Adv.*)

# Obituary Record

**Dr. John Hansford Thomas,**

Prominent physician of Augusta County, Va., died at his home in Greenville, February 1st, death being due to cardio-vascular-renal disease. He was sixty years of age and graduated from the former Baltimore Medical College in 1896. Dr. Thomas was an active member of his local society and had been a member of the Medical Society of Virginia since 1910. His wife and two children survive him.

A physician, who knew Dr. Thomas intimately, paid him a wonderful tribute, saying in part: "Dr. Thomas was in many respects the most remarkable physician I have ever known. I have never known a doctor who held the love and esteem of his clientele to a greater degree than did Dr. Thomas. I have never seen such devotion, and he had a remarkable personality, too."

**Dr. George W. McAllister,**

Hampton, Va., died March 30th, from toxemia, after having been in ill health for about a year. He was fifty-six years of age and a native of Hanover County, Virginia. Dr. McAllister graduated from the former University College of Medicine, Richmond, Va., in 1899. He was a Fellow of the American College of Surgeons, President of his County Medical Society, and Secretary of the Board of Directors of the Dixie Hospital. Dr. McAllister had been a member of the Medical Society of Virginia for thirty-three years. His wife survives him.

**Dr. Nathaniel Albert Nicholson,**

Back Bay, Va., died April 3rd, at a hospital in Norfolk, Va. Death was the result of a brain tumor. He was a native of North Carolina and was fifty-three years of age. Dr. Nicholson graduated from the former University College of Medicine, Richmond, Va., in 1901. He had practiced at Back Bay since his graduation and joined the Medical Society of Virginia the same year. He was also an active member of the Seaboard Medical Association of Virginia and North Carolina. His wife survives him.

**Dr. Harry Tilden Hopewell,**

Strasburg, Va., died March 18th, as a result of paralysis. He had been in ill health for the past ten years. Dr. Hopewell was fifty-six years of age and graduated from the former Maryland Medical College in 1903. He had been a member of the Medical Society of Virginia for twenty-five years. Dr. Hopewell was very active in civic work. He was a Mason and also connected with several other fraternal orders. His wife and three children survive him.

**Dr. B. Arthur Middleton,**

Prominent physician of the Northern Neck section, died at his home in Emmerton, Va., April 3rd. He was seventy-seven years of age and graduated from the College of Physicians and Surgeons, Baltimore, Md., in 1877. Dr. Middleton had been a member of the Medical Society of Virginia for twenty-eight years. A daughter survives him.

**Dr. Frederick Hutchison,**

Aldie, Va., died February 20th, of cerebral hemorrhage. He was eighty years of age and graduated from the former Washington University School of Medicine, Baltimore, in 1876.

**Dr. Charles Lawrence Bradshaw,**

Crownsville, Md., died February 22nd, of erysipelas. He was forty-four years of age and graduated from the Medical College of Virginia in 1912. Dr. Bradshaw had been a member of the Medical Society of Virginia for twelve years. He was a member of the Staff of the Crownsville State Hospital.

**Resolutions on Death of Dr. James McTeer Miller.**

The Southwestern Virginia Medical Society, recently in session at Pulaski, passed the following resolutions on the death of Dr. Miller:

Whereas, God in His Infinite Wisdom has seen fit to remove from our midst our beloved friend and past president, Dr. James M. Miller, of Wytheville, on Sunday morning, March 12, 1933, therefore be it Resolved:

*First.* That the Southwestern Virginia Medical Society has lost one of its strong men, always firm in his convictions yet courteous and beloved, whose going creates a void that will not easily be filled.

*Second.* That Southwestern Virginia has lost one of its outstanding physicians and citizens who gave unstintingly of himself that his fellowman might not suffer. Dr. Miller exemplified all of those sterling qualities of the true man and good physician.

*Third.* That a copy of these resolutions be spread on the minutes of our Society, a copy be sent to the VIRGINIA MEDICAL MONTHLY, and a copy be sent to his family.

Signed:

C. F. GRAHAM, Wytheville, Virginia.
Z V. SHERRILL, Marion, Virginia.
E. G. GILL, Roanoke, Virginia.

## Resolutions on Death of Dr. John Hack Ayres.

The Accomack Medical Society, at its regular meeting, on April 4, 1933, unanimously adopted the following resolutions:

WHEREAS, on December 8, 1932, our fellow member and former president, Dr. John Hack Ayres, passed to his eternal rest:

BE IT RESOLVED, That the Accomack Medical Society feels keenly the loss of one of their most valued members. His worth is attested by the host of personal followers who mourn the passing of their beloved physician. His eminence in the profession is shown by his appointment as a member of the State Board of Medical Examiners on which he served for many years until failing health obliged him to resign. He was a public spirited citizen of wide interests outside his profession.

He was a notable example of the conscientious and ethical physician He was ever considerate of others, particularly of the younger physicians with whom he came in contact. To an unusual degree he enjoyed the affection and esteem of his colleagues. His companionship and counsel will be sadly missed.

BE IT FURTHER RESOLVED, That these resolutions be published in the VIRGINIA MEDICAL MONTHLY and that a copy be sent to the family of Dr. Ayres.

J. L. DECORMIS,
IRA HURST,
J. H. HIDEN,
*Committee.*

## Resolutions on Death of Dr. Martin D. Delaney.

The Staff of the Alexandria (Va.) Hospital, adopted the following resolutions on the death of Dr. Delaney, at a recent meeting:

WHEREAS, the Master has called from our midst Dr. Martin D. Delaney, the senior member of the medical staff of the Alexandria Hospital,

THEREFORE BE IT RESOLVED, That the Alexandria Hospital has lost one of its most loyal friends and one of its most ardent workers; and,

BE IT FURTHER RESOLVED, That we, the medical staff in called meeting assembled, do hereby record our sincere sorrow at his removal at the zenith of a career of so marked leadership and ability; and,

BE IT FURTHER RESOLVED, That a copy of these resolutions be sent to the family of Dr. Delaney, and published in the *Alexandria Gazette*, and in the VIRGINIA MEDICAL MONTHLY.

LLEWELLYN POWELL,
HUGH MCGUIRE,
S. B. MOORE,
*Committee.*

## Resolutions on Death of Dr. James H. A. Lofland.

The following resolutions were unanimously adopted at a regular meeting of the Accomack Medical Society, held April 4, 1933:

Dr. James H. A. Lofland, of Melfa, Va., one of Accomack County's oldest physicians passed away at his home February 29, 1932, aged 82 years. Dr. Lofland's early education was in the schools on the Shore He afterward attended schools in Baltimore, Md., and received his M. D. from the College of Physicians and Surgeons in 1875. Dr. Lofland had been in poor health for several years but possessed a remarkable mentality and always endeavored to keep abreast of the times. Dr. Lofland was a member of the Accomack County Medical Society and had been since its organization The Accomack County Medical Society passed the following resolutions:

WHEREAS, Dr. James H. A. Lofland was, on February 29, 1932, removed from our midst by death, and

WHEREAS, he had been a member of our profession and a member of this Society

BE IT RESOLVED, That in his death the medical profession has suffered a grievous loss, and the people whom he served a wise counselor, a sympathetic friend and a faithful attendent; that our sympathy be extended to his family and clientele; that a copy of this be recorded in the minutes of the Accomack County Medical Society, a copy sent to his family and a copy to the VIRGINIA MEDICAL MONTHLY.

J. L. DECORMIS,
IRA HURST,
J. H. HIDEN,
*Committee.*

## Dr. Eric Alonzo Abernethy,

Chapel Hill, N. C., died suddenly March 21st. He was fifty-six years of age and graduated from the former University College of Medicine, in Richmond, Va., in 1901. He served in the medical corps of the Army during the World War.

## Dr. John Rollin Shultz,

Charleston, W. Va., died February 6th. He was forty-two years of age and a graduate of the Medical College of Virginia in 1918.

## Col. Charles R. Keiley,

For nearly fourteen years connected with the Virginia State Health Department in an administrative capacity and as director of rural health work, died at his home in Richmond, Va., April 15th, after an illness of several weeks.

## ELIZABETH BUXTON HOSPITAL — Newport News, Virginia

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Hunter H. McGuire, M. D.
Margaret Nolting, M. D.
John Powell Williams, M. D.
Kinloch Nelson, M. D.
Clifford H. Beach, M. D.

**Pathology and Radiology:**
S. W. Budd, M. D.

**Obstetrics**
H. Hudnall Ware, Jr., M. D.

**General Surgery:**
Stuart McGuire, M. D.
W. Lowndes Peple, M. D.
Carrington Williams, M. D.
W. P. Barnes, M. D.

**Roentgenology:**
J. L. Tabb, M. D.

**Urology:**
Austin I. Dodson, M. D.

**Orthopedic Surgery:**
William T. Graham, M. D.
D. M. Faulkner, M. D.
J. T. Tucker, M. D.

**Dental Surgery:**
John Bell Williams. D. D. S.
Guy R. Harrison, D. D. S.

**Eye, Ear, Nose and Throat:**
F. H. Lee, M. D.




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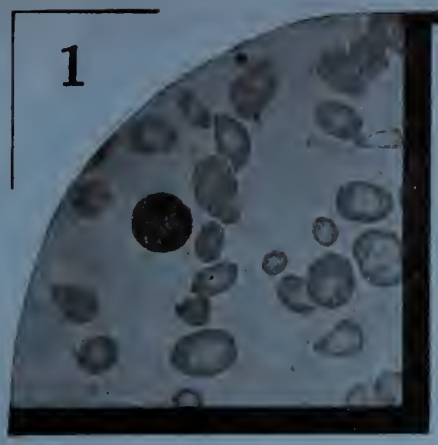

1

*At left*—Pernicious Anemia pretreatment level. R. B. C. 820,000 per cu. mm.; Hb. 17%. Started Ventriculin 40 Gm. daily.

*At right*—Fourth day of treatment. Reticulocytes 54%; R. B. C. 1,120,000 per cu. mm.; Hb. 24%.

2

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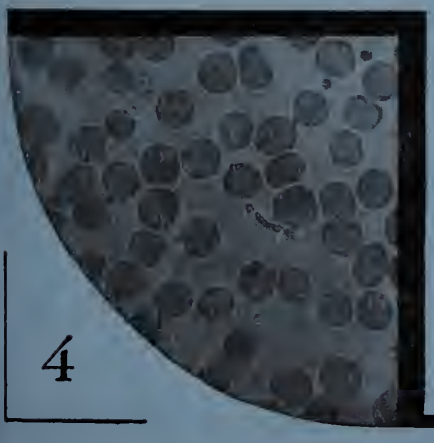

4

*At right*—Seventeenth day of treatment. R.B.C. 2,440,000 per cu. mm.; Hb. 56%.

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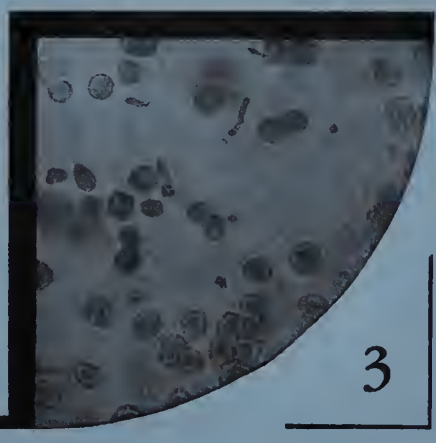

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RICHMOND, VA., JUNE, 1933

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## THE YEAR'S PROGRESS IN HEALTH WORK RELATING TO THE MEDICAL PROFESSION.*

WARREN F. DRAPER, M. D., Richmond, Va.
State Health Commissioner.

At my first appearance before this Society one year ago, I undertook to define my policies on certain questions relating to public health and medical practice and to recommend for joint consideration several matters which required further study. The main purpose of my paper was to lay the foundation for a complete and satisfactory understanding between these two important branches of the medical profession in order that they might work together in perfect confidence and harmony for the best interests of the people whom they serve.

It had been my intention to present a progress report on several of the acitivities of the State Department of Health which are of greatest concern and interest to the members of this Society but it developed that when I had covered the first of these subjects which had to do with our cooperative program for diphtheria control I had occupied the entire time allotted for the paper. I shall, therefore, defer until another occasion the consideration of all matters except diphtheria.

You will recall that the problem of accomplishing a sufficient number of immunizations to insure to the children of the State a reasonable degree of protection against diphtheria, smallpox, and typhoid fever was an important consideration last year. As the incidence of diphtheria was very high, a plan for extensive immunization work to be done by the physicians of the State was presented to the President and Council of the Society and approved. You are familiar with its details which provided that local health officers and nurses should undertake to organize groups of children in order that they might receive immunizations from the local physicians at a cost to be determined by the physicians.

It was realized, of course, that unforeseen difficulties would be encountered when the plan became operative but a beginning had to be made somewhere, and there was reason for believing that the experience to be gained from an earnest effort to carry out such a joint program might lead to a future plan which would be more satisfactory and which might be applied to other diseases and also serve as a basis for further cooperative enterprises.

The experience has been useful as anticipated, and has resulted in the complete immunization of approximately fifty-five thousand pre-school and school children, many of whom would probably not have been reached otherwise. Aside from the actual work accomplished, I believe that the most valuable result has been the general recognition on the part of the practitioners that the Health Department is in earnest in its desire to work in cooperation with them and that its announced policies are more than merely words, as was the first impression of some of the members of the Society. The feeling of confidence in the Health Department and the better relationship and understanding which have been established are, in my opinion, well worth the time and effort which have been expended.

As was to be expected, certain difficulties were encountered in working out the plan in some communities. I mention them here for the value that the experience may have in the development of future plans, and in the hope that a satisfactory solution may be found.

The greatest difficulty which arose was that of securing immunizations when the charge to the individual case exceeded fifty or seventy-five cents per complete immunization. When the charge was as high as two dollars per immunization, the cases which responded were so few that the accomplishment was by no means commensurate with the cost of the undertaking. As an example, I wish to cite the actual experience in one county as follows:

1. Two meetings of the county medical society were held and the physicians formulated a plan for toxin-antitoxin clinics in the schools.

2. Members of the local health department

*Read at the sixty-third annual meeting of the Medical Society of Virginia in Richmond, November 1-3, 1932.

discussed the proposed program in detail with the county superintendent of schools and arrangements were made for the cooperation of all school teachers in putting on the work.

3. A provisional schedule of proposed clinics was worked out by the health unit and the superintendent of schools, and submitted to physicians at a meeting of the medical society.

4. The county nurse visited every school in the county and distributed form letters to every child in the school. These letters were taken home by the children for a parent to sign giving permission for the health officer to do the Schick test, unless the family preferred to employ a private physician. This procedure was approved by the county society.

5. The health officer accompanied by the county nurse visited every school in the county and gave the Schick test to approximately three thousand school children.

6. The health officer accompanied by the nurse made a second visit to every school to read the Schick tests. Four hundred and fifty positive tests were recorded.

7. The health officer secured an abundance of publicity for the program by a number of newspaper articles and talks. The material was published in local papers and in near-by morning and evening city papers which had a wide circulation in the county.

8. The county nurse visited all of the schools and gave brief talks on diphtheria prevention and stressed the proposed clinics. Much literature on diphtheria prevention was distributed through the teachers, and a number of teachers gave talks on the subject to their pupils.

9. A form letter composed by the county medical society was distributed by the county nurse, assisted by the teachers, to each of the 450 children who reacted to the Schick test. The letter fully explained the proposed clinic and gave the time at which the clinic was to be held at the school which the child attended. The fee of two dollars for the complete immunization was mentioned, and the parent was asked to sign the letter if he wished to have the child immunized and to indicate in a space provided for the purpose the name of the physician whom he preferred to do the work. The letter was then to be returned to the principal of the school.

Of the total of 450 Schick positive children, thirty-four applied for immunizations. These were scattered widely over the county. Sixteen of the thirty-four divided their applications among nine county physicians, and the remaining eighteen expressed the desire to have the work done by eleven different physicians who lived at separate places in six counties and cities.

Under the circumstances it was manifestly impracticable to attempt to render service under the clinic plan and it was abandoned.

Approximately six full weeks of intensive effort were devoted to this work by the health officer, county nurse, and office clerk. A combined total of about 4,000 miles was travelled by members of the unit. In addition there were the office expenses incident to the work and the cost of the Schick material.

While this experience was costly, it was perhaps worth while in that it defines the limits of the financial returns which may be expected from immunization work among the general population. The question which naturally follows is whether or not the compensation which the physician can actually secure for such services makes it worth his while to render them.

In the joint program under discussion the physicians in several counties answered the question in the negative without attempting the work at all and voluntarily requested their local health officers to immunize all the children for whom they could find the means to provide material. In other instances, physicians who willingly agreed to enter into the plan were unable to collect sufficient fees even to pay the cost of the material, and gave not only their time and travel expenses but paid for the material besides. There were on the other hand a number of physicians who had successful clinics and who felt that they were repaid either by the financial returns or by the contact which they maintained with the people in the communities which they served. While I have certain suggestions to offer which may be of value in overcoming some of these difficulties, I am depending upon a free and full discussion by those who have had experience with this work and from the discussion I hope to derive valuable information which will serve as a guide in the development of future plans.

In considering further the question of diphtheria immunization, there are certain essential facts which should be borne in mind; namely, that approximately 90 per cent of the deaths and 70 per cent of the cases occur among children of pre-school age, and that 40 per

cent of the pre-school children must be immunized in order to give a reasonable degree of community protection. It is among the pre-school children, therefore, that our efforts must be intensified if we hope to avoid a repetition of the 225 needless deaths from diphtheria which was the toll exacted by this disease in Virginia last year. It is this group also which only the family physician can reach to advantage. The point which I wish to emphasize above all others is the following: THE ULTIMATE SOLUTION OF THE DIPHTHERIA PROBLEM AND OF THE IMMUNIZATION PROBLEM LIES WITHIN EASY REACH OF THE PRACTICING PHYSICIANS OF THIS STATE—IT IS THEIR DUTY TO ACCEPT THIS RESPONSIBILITY AND TO DO A GOOD JOB IN MEETING IT.

The plan that would yield certain success would be for every physician who attends a birth to assume the responsibility for seeing that the child is immunized at the end of six months. If the circumstances are such that he cannot do the work himself, he can at least see that the obligation is placed upon a colleague. In cases delivered by midwives, physicians might prefer to place upon the health department the responsibility of securing immunizations.

An interesting discovery has recently been made which promises to give additional reason for the routine diphtheria immunization of infants at the age of six months. It has been found that when animals receive diphtheria toxoid administration prior to smallpox vaccination the reaction to the smallpox vaccination is always milder. It seems reasonable to assume that this will also be the case in children, and observations are now being made to substantiate this point. Since toxoid seems definitely superior to toxin and antitoxin mixtures for pre-school children and produces no greater reaction it would seem to be a decided advantage to use this material routinely in the pre-school group and to follow the diphtheria immunization by smallpox vaccination a month or so later.

To make the task of routine diphtheria immunization easier, much educational work has already been done among the public, much is being done, and more *can* be done. You are all familiar with the little stickers now attached to the birth certificates advising that the child be immunized against diphtheria at the age of six months. At the suggestion of one of the rural practitioners in the State we are now considering the sending of return postcards at the end of nine months requesting a reply as to whether the work has been done and if not the reason why.

Will not the practicing physicians in the State of Virginia undertake to serve the people and themselves by adopting this plan and carrying it out through concerted effort? And if they do not meet the obligation, which is so manifestly theirs, are they in any position to wage a successful battle against any means which the populace may demand to improve the situation? Can the Medical Society of Virginia perform any single service for its members which will be of more value than that of sponsoring such a program and guiding it to success? I assure you that the public health authorities, whether State, municipal, or local, are ready to aid you in every way within their power.

Pending the time that such a program can make itself felt, there are, of course, many pre-school children and others who must still be reached. In these few intervening years I believe that the best results can be secured by concentrating our energies upon the pre-school group and the children in the first and second grades of school.

To accomplish this purpose I am inclined to believe that a modification of the plan of last year might be worth the trying. Instead of the nurse undertaking to bring the children into direct contact with the physician, as was done last year, I would suggest that the various local school associations or civic groups be led to sponsor the organization of groups of children for immunization by the physicians, and that these associations undertake the responsibility of collecting the sums necessary to have the work done and for compensating the physicians. Presented in more detail the plan would be somewhat as follows:

With the approval of the county board of health and with the cooperation of the division superintendent of schools, a representative of the health department would undertake to induce suitable community organizations to support a program for immunizations of pre-school children and those in the first and second grades. The following duties would devolve upon the local associations:

1. To secure a list of the unprotected children in the community.

2. To visit the homes or to see that the fami-

lies are supplied with diphtheria literature and a schedule of the clinics.

3. To be responsible for the dissemination of information through churches, lodges, and by means of local papers.

4. To raise funds for the purchase of material and the payment of physicians' services from boards of supervisors, local organizations, and from such families as can afford to pay for the service.

5. To arrange with local physicians to do the work at a rate of compensation to be agreed upon in advance of the undertaking. By this arrangement the physician is assured of immediate payment for his services and a reasonable return for the treatment of indigent persons as well as from those who can pay.

The general principles of this plan have been carried out in a school vaccination program in Mecklenburg County under the direction of the Division Superintendent of Schools, Mr. C. B. Green, and in an immunization program conducted under the auspices of the West Point Kiwanis Club. The results reported from these two places were highly satisfactory and would seem to justify a trial on a State-wide basis.

While I have devoted all of the time allotted me to the subject of diphtheria prevention, I believe that this is justified. Any disease which can be prevented by a simple, practical, and inexpensive procedure, and which yet continues to take the lives of 225 Virginia children in a single year, and to cause the serious illness of 4,641 others is worthy not only of our prayerful consideration but it becomes a tremendous responsibility when we realize that it is well within our power to stop this wastage of life and to prevent needless suffering in thousands of Virginia families. In terms of money the cost of the disease last year to the families of those afflicted was well in excess of one hundred and twenty thousand dollars if the estimate is based on a low average cost of $25 per case. In this connection it is interesting to observe that the cost of physicians' services for immunizing all of the approximately 53,000 children to be born in Virginia during the year 1932 would probably not exceed the cost of caring for those who will become ill for want of immunization.

In conclusion, may I say that upon our success in working out a satisfactory cooperative procedure for meeting this particular problem, involving as it does important principles in the fields of medicine and public health, may well depend the solution of other problems in these fields, and upon the right solution may depend our future destinies.

### Discussion

Dr. W. O. Bailey, *Leesburg:* This is a moment of auspicious augury. The Department of Health of the State of Virginia, the great contrifugal force, and the physicians in private practice, the great centripetal force, are about to join hands in happy and understanding unanimity in the accomplishment of a great deed—the stamping out of this terrible scourge of diphtheria. The Director of Health offers us a constructive plan. Let us examine it. It is excellent, in my opinion, except for a few details. I believe that the paternalistic tendency in our country has precipitated most of our woes. Those who can pay for services should pay, even though it be only a widow's mite. The Department of Health should, I think, see that all patients come to their physicians and should keep and supervise all records. If the physicians do the work, that should be sufficient.

No one takes more interest in this subject than do I, for upon me devolves the duty of intubation. Just a few weeks ago I was called to a home in Fairfax County for this purpose. Four children in the family had failed to take advantage of immunization. It is true that a speedy intubation changed a child gasping, inarticulate, and purple, into a speedy convalescent. But why take the risk? This is not always the result.

In approaching this problem we should have a factor; we should know when we begin and when we end. For example, using the county from which I come as a prototype, in Loudoun we have three hundred children in the first grade, the same number (approximately) in the second grade, and a little over five times as many from infants to five years old—in all, about twenty-two hundred children. If we take forty per cent of this number, we know that we have approximately nine hundred children to immunize next year, minus those we have already done in these age ranges. After that we shall have only between three and four hundred a year, dependent upon the number of births. But why not strive for all twenty-two hundred? If we fall short, we shall be closer than if we had never tried.

We are most fortunate in having as Director of Health a man who is so patient, so tolerant, so forbearing, so cooperative, so experienced. He is a gallant leader. Let us follow him. Let this great centrifugal health force and this great centripetal medical force join hands and save the lives of these innocent little children.

Dr. Franklin D. Wilson, *Norfolk:* This paper of Dr. Draper's is at once an indictment of and a challenge to the medical profession in this State. I am in happy accord with what Dr. Draper has said with regard to the necessity for education of the public and of the physicians with a view to protecting the children of the State from the ravages of diphtheria. This experience the doctor had is not the only one of the kind that has been had in this State; Dr. Williams, his predecessor, had much the same experience under similar circumstances, with the result that practically nothing was done. Unless we physicians assume our place in the educational scheme we cannot hope to do much more in the future than we have done in the past. It seems a pity that we wait for lay organizations to develop this scheme of protection against diphtheria. Dr. Bailey has suggested that through civic organizations and other lay organizations the public may be

acquainted with it. But we have at our disposal a means of combating this disease, in addition to what Dr. Draper has proposed, which will certainly cut down Dr. Draper's figures by thirty per cent. He states that about seventy per cent of the cases occur before school age and about thirty per cent in children of school age. At the White House Conference it was stated as being half. Now, we have at our disposal a method of absolutely preventing this thing among school children. We know what the law requiring vaccination for smallpox prior to entrance into school has done for the people of the State. We know that our children do not have smallpox, and we can give the credit for that to our compulsory vaccination law. We know that this method of prevention of diphtheria is almost as effective as vaccination for smallpox. We know that thirty per cent of the cases occur in children in the schools. Furthermore, many of the cases among the smaller children in the home are contact cases developing from cases in the schools. Now, that can be done if we will; we can ask the legislature to do it. It was defeated in the House of Delegates of the Society today, but it is a method we have of at once getting rid of a large number of deaths from preventable diseases.

On the other hand, it is possible for physicians, in their capacity as guardians of the public health, to protect the people in a far larger way than we have been protecting them. I have a fairly large practice among children, and last year I did not see a single case of diphtheria among the children with whom I worked. The three cases I did see were referred to me by other physicians. The point I am making is that if everyone would try to do his duty, we could very largely eliminate the disease. But, human nature being what it is, we do not do it. It is our duty to get behind this movement and teach the people how to protect their children; and I feel we should go a step further and have a compulsory inoculation law, which could be an enabling act, so that the various counties could take the necessary steps to make it effective. I certainly feel that the time has come to do something about it.

Dr. Wm. B. McIlwaine, *Petersburg:* The diphtheria work is, of course, of vital interest to every doctor in the State, and I am sure we all appreciate Dr. Draper's very clear-cut and valuable paper.

There are a few little points which I should like to bring to his attention, so that he can enlighten us on these facts. The first thing is that there was some recent work done in New York which seems to show that the six months' immunization period is not as good as if done at nine months. By the use of the Schick test (which, after all, is the final criterion as to whether you have an immune patient), it has been worked out by some men that if you immunize at six months you have a higher number of non-immune children at the end of eighteen months than if you immunize at nine months, due to the fact that the child has some immunity from the mother.

The second point is that, after all, the Schick test is the final factor, and it seems to me rather imperative to have a State Board of Health man or somebody else in the community doing the Schick test on the cases that have been apparently immunized by the toxin-antitoxin or the toxoid. Of course, it is definitely known that we have cases of diphtheria after we have immunized the patients. That is a very small factor, of course, but it seems to me that the Health Department might work on the line of following up the Schick test and letting the patient know he is not definitely immunized until he has had a negative Schick test.

There is one other point I should like to bring out. It seems to me it would be a wonderful thing for our statistics if the report of every case of diphtheria could carry on it information as to whether the child had been immunized and, if so, when. That would give us some very valuable data, for we would know definitely how many cases occur after the children apparently are immunized.

It seems to me, too, that it would be a very valuable addition to our statistics if the Bureau of Vital Statistics would send a card to the mother of each child registered with them, six months or nine months after birth, stating that it is time for the child to be immunized and urging the parents to have it done, if not already done. I think that is better than depending on the doctors. Whether the mother has moved away or not, she will get the card and know that her child needs immunization.

Dr. M. B. Hiden, *Warrenton:* There is possibly a point that has not been thoroughly brought out or properly emphasized, and that is that in some sections at least the physicians have to some extent resented this work being done by the State Health Department, not realizing that the State Department is only doing the work that the local physician voluntarily neglects. Now, why does the State Department do this work? Simply because the physicians do not do it themselves. If the physicians themselves would do it and do it properly, the State Department would be glad to keep out of it. If, as Dr. Draper has said, the physicians would notify the parents, when the child is born, that the child should be immunized at six months or eight months or nine months, and would keep a record on his books when the various immunizations were due, and when these dates arrive would send a notice to the parents that the child was due for immunization, it would not be unethical, would increase the physician's practice, and would relieve the State of the trouble and expense of doing this work. The family physician should see that the child is immunized and that this is done at the proper time. In this way each doctor would get his practice thoroughly immunized, would keep the patients in his own hands and would be a greater help to the patient, to himself, and to the Health Department. I am sure that the Department of Health would be delighted to have each physician immunize his own clientele and thus relieve them of much trouble and expense. If you, the physicians, have not enough influence or standing with your patients to induce the parents to have their children immunized at the proper time, or if your patients have not enough intelligence to follow your advice, you have lost nothing in having this work done by the State. If these patients do not come in to you after you have urged them to do so, and if they will not accept your services in protective medicine, you should be very glad to have the Health Service do this work, because in such cases there will be no loss to you whatsoever. I want to urge every physician present to immunize the children in his own practice and to follow them up in every way possible, and if they neglect to come to you, then let the Health Department have them, with our most gracious thanks and appreciation.

Dr. T. H. Daniel, *Charlottesville:* We did this work in Charlottesville and Albemarle. Last year I was on the committee from the local society. We had newspaper articles, had posters in the schools, had letters sent out from the schools, and tried to bring it before every family represented in the schools, from the public health standpoint. Personally, I felt that with the families I attended I

would have more influence than any public health official or any school authority; and so, at the possible risk of being called unethical, I sent a personal letter to the mothers of children of pre-school age whom I had attended in their confinement. I found the records of 175 for whom I could get pretty accurate addresses, and I sent out 175 letters, writing it as a personal letter. I had them mimeographed, but I stated in there that it was a personal letter to each one and that I had them mimeographed simply because I was sending out a good many. In the letter I stated that the child had reached the age when it was susceptible to diphtheria, a disease that could be prevented, and urged that these children be brought in for immunization. I stated in my letter that the cost was slight but that if anyone was not able to pay the fee charged I should be glad to do it for nothing. As a result of those 175 letters, I had over a hundred children brought to my office for immunization. I was told this afternoon that 1,054 immunizations were done in our county. Of those, about 600 were done at the clinic, leaving four hundred that were done by the practitioners of Charlottesville and Albemarle. Of those 400, apparently I did approximately one-fourth, and I certainly have not anywhere near one-fourth of the practice. I believe, gentlemen, that it was simply the personal appeal that I made in those letters that brought them in.

Now, just one word. There was some fear expressed by some of my colleagues when I told them of this plan that I should be accused of advertising, that the patients would think I was hunting business. I tried to overcome that by making the letter a very personal one. Then, it was thought that maybe a great many would try to take advantage of the offer to do it free. But, of the 112 who have responded, only three families have asked for free immunization.

Dr. Draper, closing the discussion: I want to express my appreciation to the gentlemen who have discussed this paper for the points which they have brought out. And I want to express my appreciation, on this occasion, to the doctors of Virginia. I know, as I said last year, the feeling that has existed rather generally on the part of the medical profession toward various public health activities But throughout my first year of service with you I have received nothing except the most cordial cooperation We have not always agreed, and sometimes we have had some pretty frank correspondence and conferences, but the end result in every case has been entire understanding and accord. I hope that we are going to be able to work out our problems together here in Virginia to our mutual advantage, and, more than that, to the great advantage and benefit of the people of the State, whom we all serve.

Dr. Hiden was entirely correct when he said that the Health Department has no desire to usurp the field of preventive medicine My conception of our field in regard to preventive medicine is that it is largely educational. I think you are the ones who should practice preventive medicine, just as you practice curative medicine. But when such conditions exist in the State that people are suffering and dying from preventable diseases naturally the public health authorities are called upon to do something about it.

The technical questions that have been asked I know can be answered much better by my associate, Dr. McGinnes, who is actively engaged in experimental and diagnostic work in cooperation with you. I am going to ask permission, therefore, for Dr. McGinnes to answer the questions in regard to the Schick tests, etc. He has all the facts at his finger tips.

Dr. G. F. McGinnes, *Richmond:* Unfortunately I am not familiar with the paper which Dr. McIlwaine referred to. I should be very glad to have a reference to it. Dr. Park, in New York City, found that the immunization of children, in the first months of life, with toxin-antitoxin was not effective in all instances. He came to the conclusion that immunity received at birth prevented the production of a lasting immunity by the toxin-antitoxin because sufficient antitoxin was present in the patient's blood to completely neutralize the toxin-antitoxin mixture.

In a recent experience in a rural county in Virginia, where 2,000 children were Schick tested, we found that a considerable number of the children retained the immunity received from the mother up to six months of age and that a small percentage of these children retained their immunity up to nine months and a few up to one year. It would indeed be interesting to retest these children and try to determine how much longer the immunity derived from the mother is retained. I was of the opinion that it would be a wise procedure to administer toxoid in these cases.

At the present time the Bureau of Epidemiology has 10,000 children under observation, the immunity status of each being known, and we are attempting to compare the value of toxin-antitoxin and toxoid. We are also attempting to determine the minimum dose of toxoid that will be effective. This depends, of course, a great deal upon the potency of the toxoid used. We fully appreciate the fact that in a rural population children do not acquire and maintain immunity as do children of an urban population, because the latter are subjected more or less frequently to minute doses of the infective material which may gradually build up an immunity without showing clinical evidence of the disease This process does not go on to the same extent in a rural population because of fewer contacts.

Dr. Wilson has brought up a very interesting point and one that I wish I could answer concerning the State of Virginia. He said that at the White House Conference it was stated that only fifty per cent of the cases of diphtheria occur in children under school age. We have had no way of knowing the age, sex and color of our diphtheria cases until the beginning of the weekly reporting system on July 1, 1932. There has been apparently a change in the age distribution of diphtheria effecting the older age groups. I cannot explain this unless it may be that in rural populations immunity is developed later in life.

I wish to express the appreciation of the State Board of Health for the cooperation that the physicians of the State have given in the reporting of communicable diseases since the beginning of the weekly reporting system. Dr. Maxcy, who has installed similar systems in other States and who very kindly gave us his advice and help in beginning our weekly system, felt that if fifty or sixty per cent of the physicians of the State reported we should consider the system a success. I am very glad to say that ninety-four per cent of the physicians of the State have reported under the new system.

## THE EARLIEST MEDICAL LIBRARY IN THE UNITED STATES.*

FRANCIS R. PACKARD, M. D., Philadelphia, Pa.

In 1876 the people of the United States celebrated the one hundredth birthday of this nation. In the fifty-six years that have succeeded that epochal date the entire science of medicine has undergone a growth and development far exceeding in importance the changes which it underwent in the twenty-three centuries which had elapsed from the age of Hippocrates to that time.

What would one of us do if he found himself transplanted back to the year 1876, a date not so very remote but that many of us can recall it, and placed in active practice, with no science of bacteriology to explain the origin of the vast majority of diseases, point the correct method of treating them, or establish the principles on which our entire system of aseptic surgery is based; no knowledge of the important role played by insects in the transmission of some of the most dreaded scourges of the human race; without the aid of the X-rays and radio-activity in our diagnosis and treatment of many pathological conditions; with none of our routine blood examinations or methods of serological diagnosis, and with no knowledge of immunology!

Voltaire said, "the miracle of today is the commonplace of tomorrow." We fortunate ones use our advantages as a matter of course, with little thought of the difficulties under which our predecessors labored without them. Pick up Watson's "Principles and Practice of Physick," or Samuel D. Gross' "Surgery," two of the best books available on medicine and surgery, respectively, in 1876. From their pages you will learn that though they were confronted by the identical conditions of disease and traumatism which we see now, they were compelled to meet them without the aid of the knowledge of their causation or proper treatment possessed by the most recent graduate of the present day.

On an occasion such as the present there is no reason to extol the usefulness of books, for have we not met to show our appreciation of their value?

Books and medical periodicals are as absolutely essential now as they have ever been to the spread of knowledge and to render it available to all, but I am going to take you back to a time when books were the chief, in fact, almost the only extrinsic aids of the practitioner in his daily work, and hope thereby to impress upon you the importance of medical libraries by telling you the story of the foundation of the first medical library in this country, that of the Pennsylvania Hospital in Philadelphia.

In the eighteenth century in America medical books were scarce, expensive and hard to procure. This is evidenced by the care with which those who had been so fortunate as to be able to attend the courses in the medical schools abroad preserved their notes on their teachers' lectures. In the manuscript room of the College of Physicians of Philadelphia there are scores of such notebooks, many of them kept by William Shippen, Jr., Adam Kuhn, and others, who in their turn became teachers. In many instances these books show marginal annotations, written many years after the original manuscript, indicating that they were referred to and used by their owners in their professional work, even after they themselves had become teachers.

The Pennsylvania Hospital was founded in 1751, and is the oldest existing hospital in the United States which was not established primarily as an almshouse or poorhouse. Although the credit for its foundation is frequently ascribed to Benjamin Franklin, he distinctly disclaims it in his "Autobiography," in which he ascribes the honor of first suggesting the idea to Dr. Thomas Bond, one of the most prominent physicians of the day in Philadelphia. It was, however, due to Franklin that the project was carried to a successful conclusion. It was he who secured the necessary money to start it, he served it first as clerk, later as president, of the Board of Managers, and he was the hospital's constant friend and benefactor to his dying day.

For many years prior to the Revolution Benjamin Franklin resided in London as a colonial agent. During this time he acquired many warm friends in that city and was held in much esteem by the large group of Englishmen who sympathized with the Colonies in their attitude towards the Mother Country. Among Franklin's intimates in London were two Quaker physicians, John Fothergill and John Coakley Lettsom. Both of these men were deeply interested in the affairs of the Quakers in America. They were men of good social posi-

*Read before the Richmond Academy of Medicine on the occasion of opening its new building, September 20, 1932.

tion and much wealth, and they both took an active part in aiding the development of medical science in America.

We all know what a very large number of young colonists, after beginning their medical studies at home, went abroad to complete them and acquire a medical degree. Scattered throughout the Colonies there were many physicians who had received their medical education before coming to America, such as Cadwallader Colden and Samuel Bard, of New York; William Hunter, of Rhode Island; Lionel Chalmers, Alexander Garden and Alexander Baron, of South Carolina; James Craik and Hugh Mercer, of Virginia, and John Kearsley and Abraham Chovet, of Philadelphia. These men realized the deficiencies of such training as they could give their students and urged them whenever possible to go abroad for further study and to obtain a degree. It is quite amazing how many young men availed themselves of the opportunity for foreign study. Although, a few, such as John Redman, of Philadelphia, went to Leyden, the great majority went first to London to study anatomy and midwifery under the Hunters, and see the surgical practice of the London hospitals, and then to Edinburgh to obtain the degree of M. D. Some idea of the number of American medical students at the University of Edinburgh in the eighteenth century may be drawn from some statistics recently gathered by Dr. J. Gordon Wilson,[1] of Chicago, which show that prior to 1765 there were fifteen graduates in medicine from the University of Edinburgh practicing in the Colonies, and that, "From 1765 to 1783, despite the interruption of the American War of Independence, 1775 to 1783, there are 113 names of Americans who received the University degree of M. D."

Benjamin Franklin was one of the most widely known men in the British Colonies, and while he was living in London every young American who went abroad carried letters of introduction to him. In London Franklin lodged most of the time with a Mrs. Stevenson, whose daughter, Polly, married William Hewson, the brilliant young anatomist, who before his untimely death at the age of thirty-five had made some remarkable researches in the anatomy of the lymphatic system and the coagulation of the blood. Hewson was William Hunter's assistant in his school, and we may be sure he interested himself in the young American students who were protegées of his mother-in-law's distinguished lodger. Franklin also introduced his young countrymen to his friends Fothergill and Lettsom, and they in turn put them in the way of making the best of their opportunities for study in London, and when they departed for Edinburgh gave them helpful advice, and letters of introduction to the teachers in that city.

Perhaps you may wonder what all this has to do with the founding of the first medical library in this country, and now I will try and show you. In 1762, eleven years after the Pennsylvania Hospital was founded, it received the gift of a book from Dr. John Fothergill. The Minutes of the Board of Managers of its meeting held July 27, 1762, contain the following: "William Logan, lately returned from London, attended the Board with a Book entitled 'An Experimental History of the Materia Medica by William Lewis, F. R. S.' lately published in London, being a present to this hospital by Dr. John Fothergill, for the Benefit of the Young Students in Physic who may attend under the Direction of the Physicians, which is kindly acepted by the Managers as an additional Mark of the Doctor's benevolent Regard to this Institution, and William Logan is requested to acquaint him with our grateful Acceptance thereof."

It should be noticed that the donor distinctly stated that the book was for the benefit of the "Young Students of Physic who may attend under the Direction of the Physicians."

At that time the staff of the Hospital was composed of four physicians, Thomas Bond, Thomas Cadwalader, Phineas Bond and Cadwalader Evans, all of whom had studied abroad and were not only well trained physicians but accomplished gentlemen. The two Bonds were brothers, natives of Maryland, who passed most of their lives in Philadelphia. Thomas Bond instituted the first course of clinical lectures given in this country in 1766 at the Pennsylvania Hospital. Thomas Cadwalader had studied under the great Cheselden, the leading surgeon of his day in London, the friend and physician of the poet Pope, and on his return to this country in 1731 had given the earliest demonstrations in anatomy to be given in Philadelphia. The staff had been granted the privilege of using the wards of the Hospital for teaching purposes, and

1. Proc. of the Institute of Med. of Chicago, 7, 129-138, 1929.

they not only brought to it their own students, but also taught students who paid fees to the Hospital for the privilege of seeing the practice in its wards.

Dr. Fothergill's present of the book soon bore fruit. The physicians to the Pennsylvania Hospital realized the necessity of books to their students and they resolved to meet it by the following generous proposal which they presented to the Managers of the Hospital on May 31, 1763, "As the Custom of most of the Hospitals in Great Britain has given such gratuities from those students who attend the Wards of the Hospital to the Physicians and Surgeons attending them, we think it properly belongs to us to appropriate the Money arising from thence. And we propose to apply it to the founding of a Medical Library in the Hospital which we judge will tend greatly to the Advantage of the Pupils and the honor of the Institution."

The Managers of the Hospital promptly agreed to this proposal of the Staff, and undertook to furnish proper accommodation and care for the books. For a number of years they were placed on shelves in the board-room in which the Managers held their meetings, but by 1807 the books had so increased in number that a long room in the center building was dedicated for the purposes of the Library. Here the books remained until 1824 when their room was taken from them and perverted into a lying-in ward. The books were placed in several other smaller rooms. You all remember that when young Oliver Wendell Holmes fought his battle to prove that puerperal fever was a contagious disease one of his bitterest opponents was Dr. Hugh L. Hodge. Well, in 1835, when Hodge was physician to the lying-in ward of the Hospital, an outbreak of puerperal fever occurred in the Ward which necessitated moving the patients elsewhere. As a result the room was again furnished to house the Library, and the books have remained in it to the present day.

There are few visitors to the Library who are not impressed with the air of antiquity and scholastic tranquillity which pervades this beautiful old room. It is of noble proportions, occupying the entire Pine Street front of the center building of the Hospital. From the floor to the ceiling it is lined with quaint old bookshelves having glass doors with large panels. A gallery or balcony runs around it about ten or eleven feet from the floor, giving access to the upper shelves. The south wall contains large windows looking out on an expanse of green lawn and flooding the room with light. Recently the Library has been used to house a collection of documents and objects of interest relating to the history of the Hospital. Among these may be mentioned the first minute book, a large part of which is in the handwriting of Benjamin Franklin, an early record book containing the records of cases operated on by Physick and other of the early surgeons, in many instances accompanied by drawings, and histories of patients of Rush and other physicians. In this Library are also placed the so-called Fothergill pictures and casts. These comprise eighteen colored anatomical plates executed by Van Rumsdyk, the best anatomical artist of his day in London, whom William Hunter employed to make the illustrations for his great work on the "Gravid Uterus," the only medical book which was printed by the famous Baskerville Press, and a series of large casts illustrating various obstetric conditions, which the generous Fothergill sent over to the Hospital by Dr. William Shippen, Jr., in 1762, with a letter stating that he hoped they would be useful in teaching anatomy and midwifery—another instance of Dr. Fothergill's interest in medical education in the Colonies.

As I have stated, from the outset the Library grew rapidly, largely by purchases made from the "Medical Fund," as the money derived from students' fees was known, but also by gifts and legacies of books. In 1774 the Managers entered into correspondence with William Strahan, the London bookseller and friend of Dr. Samuel Johnson, sending him a list of books they wished to purchase for the Library, and stating that, "When any new Books or Essays on any branch of Medicine appear we shall be glad to have copies of such of them sent as are of small cost and an acc't of such as are more costly that if we judge them necessary we may send for them." Mr. Strahan not only consented to act as the Managers' agent, but he sent the Library a donation of books worth one hundred pounds. Later, in 1790, the Managers asked Dr. John Coakley Lettsom, the Quaker physician of London, to act as their agent in the selection and purchase of books for the Library, a task which he cheerfully undertook, and in subse-

quent years the Library benefited greatly not only by his judicious selection of books but by many which he donated to it.

The first printed catalogue of the Library was published in 1790, at which time it contained 528 volumes. A little over one hundred years later, in 1893, the last printed catalogue showed that there were 14,812 volumes on its shelves.

In the early years the books were placed in the care of the Hospital's apothecary, who resided in the institution. Later when the Hospital took resident apprentices, who performed the duties of the apothecary, the Library was assigned to their custody. Although the Managers passed very strict regulations on the lending of books, many were lost because of the carelessness of some of these young men, and it was not until a man with genuine zeal for the task took charge that this evil was put to a stop. For fifty-nine years the Library was presided over by this most remarkable man, William Gunn Malin, who arrived in Philadelphia as an emigrant from England in 1823. For a year he earned his livelihood by driving a brewer's wagon, but at the expiration of that time he secured a position as clerk in the Hospital. He was practically entirely self-educated, as he had only attended a village school in England, and that not for long. After serving as clerk for a year Mr. Malin was given charge of the Library in addition to his other duties. A few years later he compiled a new catalogue of the Library, which was published by the Managers (in 1829), preceded by a brief account of the Library written by him. In 1849, Mr. Malin was made Steward, or what we now call Superintendent of the Hospital, and he remained in that capacity until 1883, when he was retired by the Managers with a pension and the privilege of living in a suite of rooms in the Hospital for life. Accordingly he continued to live in the Hospital and haunt his beloved Library until his death four years later, August 2, 1887. Mr. Malin was a born bibliophile. He acquired a reading knowledge of Latin, French, Italian, German, Dutch and Danish and became one of the best equipped medical bibliographers of his time in this country, and he turned his learning to good account in the service of the Library of the Pennsylvania Hospital. He appreciated, as few did at that time, the great value of the many rare volumes which had been bequeathed to the Library, or bought for it in the eighteenth century, and he also had the judgment to purchase rare old books for the Library when such books could be bought much cheaper and were more easily procured than they have been since. He wrote a beautiful old-fashioned hand and many of the books in the Library contain notes of bibliographic value which he wrote in them.

Thanks to the loving care of so real a bibliophile from the time Mr. Malin assumed charge in 1824 until his death fifty-nine years later, the books were so well kept and arranged that we can study the contents of the Library from its inception to the present day. As I have mentioned, the first book given to the Library was "An Experimental History of the Materia Medica," and a study of the books which were acquired for the Library in its early years show what immense importance was attached by the physicians of those days to the study of the plants and other substances used in the preparation of drugs. We might recall that at that time there were no druggists in the colonies to put up a doctor's prescriptions; he had to compound them himself, and as a rule they were very complicated and contained many ingredients. Until well along in the nineteenth century the chair of materia medica and botany was one of the most important in the medical curriculum. When in 1765, Dr. John Morgan, the founder of the first medical school in America and one of the physicians to the Pennsylvania Hospital returned from his studies abroad, he brought with him a young man named David Layton who was a qualified apothecary of London, and he startled the profession in Philadelphia by the announcement that he would not put up his prescriptions himself, nor practice venesection or cupping, but intended to turn over all such work to Layton. The innovation did not meet with the approval of his colleagues and it was many years before the physicians of Philadelphia gave up the custom of preparing the remedies they prescribed. Accordingly we find that the Library contains many old pharmacopeias, especially those of London and Paris, books on medical botany and herbals. Among the latter we might mention those of Gerard and Parkinson, and the yet older works of Lobel and Dodoneus. It is well known that many

physicians of the old days were also students of natural history. John Hunter and his pupil Edward Jenner are notable examples. The number of volumes on natural history in the Library of the Pennsylvania Hospital show that a love for this kind of science prevailed among our Colonial predecessors likewise. Among the most valuable of the Library's books of this character we find the works of the early microscopists, Malpighi, Leeuwenhoek and Swammerdam, and those of the later naturalists, Ray's "British Fishes," Bewick's "Quadrupeds," Reamur's delightful volumes on "Insects," and the works of Cuvier and Buffon.

Of course, the Library contains a number of editions of the works of Hippocrates, Galen and Avicenna. Until the end of the eighteenth century physicians quoted these authorities and consulted their writings when in difficulty. Down to the French Revolution the candidate for a medical degree in Paris had to sustain an examination on the Aphorisms of Hippocrates, and Dr. John Brown, the author of "Rab and His Friends," thought that the study of Hippocrates should be insisted upon in the medical schools. Fortunately the value of the work of Vesalius and the great Italian anatomists was appreciated, for the Library contains most of their works. Unfortunately it has not a first edition of Vesalius' "Fabrica," but it has the second, published in 1556, and the superb edition edited by Boerhaave in 1725. Though it has not a first edition of Harvey's "De Motu Cordis," it has a number of the early subsequent ones, and the labors of most of the anatomists of the seventeenth century, Bartholin, Pecquet, and Aselli, are represented by first or early editions of their works.

But of more interest than a consideration of these older works is a study of what they purchased in the way of contemporary medical literature. As I have said before, the majority of those who went abroad for medical study in the eighteenth century went to London and Edinburgh; hence, as we would expect, the Library is rich in the works of the English and Scotch teachers of that day. The shelves are full of the books of the Hunters, the Monros, William Cullen, Robert Whytt and the other men whose teachings were brought to America by so many young Colonists. From 1800 to the eighteen-forties the tide had turned to France, and we find that most of the books purchased during that period were the works of the great French school. The shelves are laden with the books of Broussais, Bichat, Laënnec, Corvisart, Larrey, Desault, Ricord, Velpeau, and especially with those of the Americans' favorite teacher, their beloved Louis. Many of these books have acquired great value, and are now regarded as rarities.

Through their American pupils these great French teachers absolutely dominated medical practice and teaching in the United States until Johannes Muller, Virchow and other Germans developed the science of microscopic pathology and later bacteriology, and turned the flow of students to their country. It is certainly curious to reflect that none of the great French or English teachers utilized the microscope in their work. Indeed, the neglect of the microscope in the investigation of the tissues of the human body in health and disease for more than two hundred years after the discovery of that wonderful aid is one of the most remarkable phenonema in medical history. With the exception of Malpighi, Leeuwenhoek, Swammerdam and a few others who were interested in the observation of natural phenonemena more than in the medical aspects of microscopy, the value of the microscope in medicine remained unrecognized from its discovery about 1600 until Johannes Muller used it to develop a new science towards the middle of the nineteenth century.

Before 1800 there were practically no medical journals. Articles on medical subjects were published in the Philosophical Transactions of the Royal Society of London and in lay periodicals, such as *The Gentleman's Magazine*, and these were duly received by the Library. The earliest American periodical was the *Medical Repository*, which was published from 1797 to 1824. This was soon followed by the *Philadelphia Medical Museum*, 1804 to 1811, and soon a host of more or less short-lived medical journals sprang into existence. The most important of these early journals was the *Philadelphia Journal of the Medical Sciences*, founded by Matthew Carey, with Nathaniel Chapman as editor, in 1820. In 1825 the name was changed to the *American Journal of the Medical Sciences*, and as such it continues to flourish. The Library contains complete files of practically everyone of these early American medical publications and they

are of the greatest importance to the historian of American medicine.

The Library also has complete files of the great British and German periodicals, such as the *Lancet* and *British Medical Journal*, and *Virchow's Archives.*

Since the publication of its last printed catalogue the Library of the Pennsylvania Hospital has ceased the attempt to keep up with the times. The growth of the magnificent library of the College of Physicians of Philadelphia, and of several other medical libraries in that city have rendered it more or less superfluous, and though the Managers had the books card-indexed a few years ago, there have been few additions to their numbers in recent years, with the exception of the periodicals which are taken largely for the benefit of the resident staff, yet it remains of the greatest value as a source of information on the development of medical science in this country.

Think of the thousands of years through which the human race had existed before James Watt developed the use of the power of steam. Within a few generations men traveled on boats propelled by its agency, and shortly after the locomotive revolutionized transportation by land. Franklin and his contemporaries little realized the practical value of the electricity with which they experimented. Within a half century the electric telegraph annihilated space, and a little later came the telephone, and now we have the wireless and the radio.

We can learn from the contents of our old Library that the same sort of acceleration occurs in the medical as in the physical sciences when once the first step has been taken. The eighteenth century practitioner had little more equipment for his work than Hippocrates who lived twenty-three hundred years before him. He had his five senses and his experience, and he could gather from books the experience of others. With no stethoscope, clinical thermometer, ophthalmoscope or laryngoscope, and not using the microscope, with no blood nor urine examinations, he went about his daily work. But just as we now think the cave man was far from being a stupid being because he must have had considerable intelligence and acuteness to enable him to live under the difficulties he encountered without any of the aids developed by a higher degree of civilization, so our predecessors must have had to use their senses and mental powers more than we do with all our wonderful scientific aids and appliances. They accomplished more than I fear most of us could do under similar circumstances. Their zeal to get the best possible professional training and to give every advantage to their students is testified by the members who went abroad to study and came back to leave, as an important monument of their professional ideals, the Library of the Pennsylvania Hospital.

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## CONSIDERATION OF SOME OF THE NEWER METHODS IN THE TREATMENT OF ENCEPHALITIS.*

BEVERLEY R. TUCKER, M. D., Richmond, Va.

On May 17, 1919, I reported in the *Journal of the American Medical Association*, eleven cases of epidemic encephalitis lethargica with two autopsies and I have ever since had a sustained interest in this disease.

In general, epidemic encephalitis would appear in many cases to be due to a virus and it has been known to follow not only influenza, but such known virus conditions as vaccinations and herpes. We had one striking case that occurred with herpes zoster. In regard to influenza as the causative factor it is more than conceivable that some cases have influenza of the brain with little, if any, upper respiratory tract infection. As an illustration, one may have intestinal influenza in very much the same manner. It is also easily conceivable that, in cases in which the history of influenza is many months previous, the virus has been inactive and dormant or slow of progress for a greater or less period.

The inflammatory process of encephalitis, whether of the epidemic form or not, may invade any part of the brain—the prefrontal lobe as shown by mental and conduct changes; the mortor cortex, the parietal lobe, as shown by sensory changes and astereognosis; the occipital lobe marked by visual changes; the temporal lobe giving changes in speech and word associations; the basal ganglia and brain stem and, in some cases, the cerebellum.

There are slight differences etiologically, pathologically and clinically in several closely similar conditions affecting the basal ganglia which may or may not be residual from encephalitis. Not here, considering cerebral ar-

*Read at the sixty-third annual meeting of the Medical Society of Virginia in Richmond, November 1-3, 1932.

teriosclerosis, central nervous system syphilis, manganese poison, cerebral poliomyelitis and bulbar palsy, all of which may affect the basal ganglia, we have briefly to differentiate paralysis agitans and Wilson's disease from the Parkinsonian syndrome of encephalitis.

Paralysis agitans appears to be a chronic degeneration of toxic or virus origin affecting the lenticular nucleus, especially the globus pallidus, which manifests itself after mid-life and is characterized by a masked expression, forward posture and flexor pill-rolling tremors of the hands.

Wilson's disease is of unknown origin; it occurs in the young, may be congenital, frequently has not the pill-rolling tremor and is accompanied by cirrhosis of the liver. The putamen of the lenticular nucleus is especially affected.

The Parkinsonian syndrome of encephalitis follows acute lethargic encephalitis, which in turn most frequently follows influenza and is characterized, particularly, by degeneration of the corpus striatum and substantia niger and, clinically, by manifestations closely resembling Parkinson's disease or paralysis agitans, except the tremor is rarely of the typical pill-rolling type and the disease may appear at any age.

Beside the just mentioned types a similar syndrome may be produced experimentally. Stanley Cobb has injected the basal ganglia of monkeys with magnesium sulphate causing degeneration and produced either unilateral or bilateral Parkinsonian syndrome at will.

There seems to be some need for at least a rough classification of the different forms of encephalitis, the cerebritis of older writers. It would appear that in such a classification should be included the following:

1. Cerebral arteriosclerotic, with edema and anemia of the brain.

2. Hemorrhagic, without known bacterial origin.

3. Post traumatic, with minute hemorrhages, edema and consequent anemia of the brain.

4. Syphilitic, with interstitial infiltration.

5. Toxic (a) Chemical—as that from alcohol, lead, manganese. (b) Endogenous—as that arising from acute febrile diseases, kidney disease, carcinoma or mass degeneration or toxic exudation in the body.

6. Infectious (a) Acute—with invasion of bacteria or virus, as epidemic; or from vaccine or from acute conditions as scarlet fever, whooping cough, typhoid fever, etc.; but especially in the epidemic form from influenza. (b) Chronic—as that following acute conditions as sequelae or aftermaths and characterized by slow degeneration, especially the Parkinsonian type.

7. Purulent (a) Contagious—as from extension of infected sinuses or mastoids. (b) Transported—as when infection is carried to the brain by the blood stream, the pus causing a local abscess, or laking, or meningo-encephalitis.

In this paper we cannot go over the whole field of treatment of all forms of encephalitis, but we shall chiefly confine ourselves to some of the newer features of treatment which may be applied, at the discretion of the physician, to the various types of encephalitis.

During 1917, R. D. Moffett, of England, suggested intraspinal autoserum treatment in chorea. Febdel in Germany, in 1920, treated lethargic encephalitis by intraspinal injection of autogenous serum and reported improvement from the treatment. Brill, of Portland, Ore., in 1920, reported five cases treated with autogenous serum intraspinally with marked improvement in four cases. The writer began, independently, in 1919, to treat certain cases of encephalitis by the intraspinal injection of autogenous serum and in 1924 reported nineteen cases so treated.

Method of Preparing Autogenous Serum for Intraspinal Use.—Thirty or forty c.c. of blood is withdrawn and placed in either two or four sterile centrifuge tubes. This is allowed to clot and then centrifuged until clear serum is obtained. The serum is then pipetted into another sterile centrifuge tube and recentrifuged at a high rate of speed to get rid of the remaining red cells. This serum is then placed in a sterile test tube and inactivated in a water bath at 56° C. for forty-five minutes to one hour. From 6 to 12 c.c. is injected intraspinally.

Dr. Howard Masters suggested that it is well to use a sensitizing dose of 1 c.c. intradermally before giving the intraspinal injection. If the reaction gives a red spot over the size of a twenty-five cent piece, it is well not to give the treatment for fear of anaphylaxis. When this is done the blood should be taken twice in order that the blood for the serum will be fresh.

About a year ago Dr. Edwin G. Zabriskie,

of New York, in a case he saw in consultation, suggested as a treatment for certain selected cases of encephalitis, the intravenous administration of 250 c.c. of 25 per cent glucose solution, followed in four hours by lumbar puncture drainage. This treatment is to be repeated about every five days for as many treatments as is deemed necessary, running as a rule from two or three to as many as eight treatments. We have used this method from time to time with remarkably good results in selected cases. The glucose is supposed, to a certain extent, to shrink the brain, and the lumbar puncture to drain off an excess of fluid together with an indeterminable amount of toxic substances. The treatment does not seem to be applicable in the residual Parkinsonian type of encephalitis nor in acute purulent encephalitis or meningo-encephalitis. We have used it in cases which were deemed to be the toxic form of encephalitis that showed in the cerebrospinal fluid a slight colloidal gold change and a slight globulin increase with increase in pressure and occasionally a slight increase in the cell count, and also in one case of post-typhoidal toxic encephalitis, in several cases of post-traumatic encephalitis, and in alcoholic encephalitis, with very considerable success, especially in regard to clearing up residual mental symptoms. We have not thus far seen any bad effects of the treatment.

In reviewing the treatment of the chronic forms of encephalitis, many drugs and procedures have been used. Reports on all drugs, save the atropine-hyoscine group and stramonium, have been on the whole disappointing. Stern advocates intramuscular or intraspinal injections of convalescent serum. Intravenous injections of iodine or mercurochrome have been used. Various fever producing agencies including typhoid vaccine and malaria have been tried. Many foreign proteins have been used. Salvarsan has had advocates. The results in all these procedures have been discouraging. Intravenous glucose has been recommended, also enemas of magnesium sulphate and starch enemas of 100 to 200 grains of sodium salicylate. These methods may be of some value in acute cases. Lumbar punctures in all acute cases have a distinct value. Endocrine therapy is of no value.

In the treatment of the Parkinsonian form we have found stramonium, hyoscine and atropine of value with probably the best results being obtained by a combination of stramonium and atropine to tolerance. In some cases, especially those in which there is evidence of cerebral arteriosclerosis, the intravenous injection of sodium iodide is of value, or the oral administration of lipiodine tablets. It must not be forgotten that skilled massage, stretching, hydrotherapy and bandaging with a rubber bandage wound tightly for a few moments and then released, thus depleting and flushing the extremity of blood, may help the tremors and allay the aching which is frequently a symptom.

In the treatment of encephalitis there are no blanket rules and no panaceas. The treatment must be approached with the form of encephalitis clearly in mind and preceded by laboratory investigations. For instance, one should not expect the good result in treating acute purulent or syphilitic encephalitis with the autogenous intraspinal serum, or with the glucose-lumbar puncture treatment, as one would expect in treating acute epidemic encephalitis by these measures, and the Parkinsonian syndrome of encephalitis requires entirely different treatment from acute or subacute encephalitis. The newer approach, therefore, to the treatment of encephalitis is as important as the newer methods of therapy.

212 *West Franklin Street.*

### Discussion

Dr. Frank H. Redwood, *Norfolk:* I am very much interested in this disease, and yet when I see a case I have a more or less hopeless feeling, because so many conditions may follow the acute disease, and the tremors and the muscular rigidities of the chronic cases cannot be cured, although they may be helped with proper treatment.

I have listened to Dr. Tucker's discussion with a great deal of interest, an interest brought about by my having to deal frequently with this type of case.

Although it has never been definitely proven, acute epidemic encephalitis is, in all probability, due to a filtrable virus. We do know, however, that encephalitis follows other conditions; for instance, smallpox vaccinations, of which I have seen one case. This case clinically and serologically was no different from the typical cases of encephalitis that occurred in epidemic form in 1919 and 1920.

I feel sure that the virus of encephalitis may remain dormant in the brain for some months before causing the picture of chronic encephalitis. In this way I also feel sure that certain cases are capable of re-infecting themselves and present the symptoms of a subacute affair. Undoubtedly, some of the mild cases are undiagnosed at the time and are the cause of conduct disorders and personality changes later on in life.

I have under my care at the present time, a man, one time a member of the legislature, who in 1927 had a severe attack of influenza. About eight months later he developed marked personality changes and disorders of conduct which are still present. He does not correspond to any definite mental diagnosis

and I feel that he has brain changes which are accounted for on the basis of an encephalitis, probably in the frontal lobes.

I think Dr. Tucker's classification is a good one. We so frequently see disorders that fit into one or other of the classes which he has given us. The treatment can well be based on his classification.

I have treated a number of cases with autogenous serum, but cannot say that I was very much encouraged. If the serum is used, however, a sensitizing dose should be given. I feel that the use of mercurochrome intravenously does no good in this or any other disease. I think the most valuable contribution in treatment is the intravenous use of glucose, followed by spinal puncture, as Dr. Tucker has suggested. Spinal drainage is always in order. On a recent visit to New York I was told that at the Neurological Institute they are treating cases of encephalitis, as well as all acute infections of the nervous system, by forced spinal drainage, and it would seem that this method gives us better results than any other mode of treatment. For the tremors and muscular rigidities of the Parkinsonian syndromes, I have obtained better results with stramonium than with hyoscine. My patients complain very much of dryness of the mucous membranes after taking hyoscine for any length of time. A very valuable adjunct in the treatment of these chronic cases is some form of massage and hydrotherapy.

Dr. David C. Wilson, *University:* There is just one point that I should like to emphasize here. That is, that in generalized infections we really have an encephalitis. Take the deliriums that follow typhoid fever, and in other infectious diseases, such as pneumonias and things of that kind; there is often an encephalitis present. The brain changes may not be due to infection as there may be only an edema. In the post-traumatic cases, because of the multiple hemorrhages, again an encephalitis ensues, and along with the encephalitis there is a great deal of edema. That is, I believe, the background for the results obtained by the hypertonic glucose and by the spinal drainage. The point I wish to make is, in a case of typhoid fever or pneumonia or any other kind of case with marked mental symptoms, as delirium, confusion, etc., don't forget these are due to real brain pathology, and that you can do a great deal with hypertonic solutions and by spinal drainage.

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## TUMORS OF THE RIBS.*

CHARLES CARROLL SMITH, Jr., M. D., Norfolk, Va.

Tumors of the bony thoracic wall which include tumors of the ribs and sternum are comparatively rare. A number of authors have collected the cases reported and as far as I am able to determine the total number is in the neighborhood of 238. In Hedblom's collected series of 213 cases, 167 (78.7 per cent) were tumors of the ribs and forty-six (21.3 per cent) were tumors of the sternum. It is often quite difficult to differentiate the two since some that apparently arise from the ribs involve the sternum and others that originate in the sternum soon invade the ribs. Of the 238 cases collected by Heuer and Andrus some were not true tumors but inflammatory conditions giving rise to tumor-like masses. In the same series 177 cases were primary, four probably primary but not definitely stated, eleven secondary to breast tumors, and thirteen secondary to other primary lesions. Hedblom reports a case in which the most careful examination failed to reveal the primary lesion which was found at autopsy to have had its inception in a supra-renal gland. These figures which seem to show that tumors of the ribs are not a common pathological finding prompted me to review the subject and report my case.

Exclusive of the sternal tumors, the right side of the chest was involved in 62 per cent of the cases, the left side in 38 per cent of the cases in which data are available. Tumors of the thoracic wall are more common in males (65 per cent) than in females (35 per cent). These two observations might lead one to think that trauma played an appreciable part in the etiology but this conclusion is probably subject to the same limitations as a factor, attributable to trauma, in relation to other malignancies. Strange to say syphilis is of etiological significance only in rare instances. One rib was involved in 22 per cent of the cases, more than one rib in 77 per cent of cases.

Fig. 1.—X-ray film of antero-posterior view, showing well circumscribed lesion. Lung field apparently clear.

*Read at sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

The third to the tenth ribs inclusive were most often involved, the seventh showing the highest number of instances of involvement.

Pathologically the sarcoma is by all odds the most common tumor; it is estimated that 60 to 65 per cent of all such tumors are sarcomata and from 15 to 18 per cent chondromata. The benign tumors other than chondromata are quite rare. Carcinomata next in frequency to the chondromata are most often secondary to breast cases but may be metastatic from distant malignant conditions.

These tumors often present few symptoms, pain and swelling being the outstanding ones. Pain is variable, it may be moderate or intense and is often confused with an intercostal neuralgia. Tumor or swelling is invariably present at some stage of the disease though it may be difficult to detect when it arises from the inner surface of a rib or under the heavy muscles of the back, the pectorals, or the female breast. There may be loss of weight; dyspnoea, cough and pleural effusion are rare symptoms.

Diagnosis is usually based on the presence of the tumor and X-ray findings. In advanced cases the diagnosis of tumor can be made without difficulty; in early cases a definite diagnosis is almost impossible in some instances. Conditions such as chronic inflammation, gumma, aneurism, dermoid cyst, and exostoses may simulate true tumors to such a degree that differentiation is made only at operation or biopsy. It is exceedingly important from an operative standpoint to differentiate tumors of the bony thorax from intra-thoracic tumors which present externally.

Early radical removal of these tumors has been accepted as the treatment of choice. One should, however, exhaust all means to prove the tumor a primary growth and carefully exclude mestastases. The results of radical surgery have, up to present, been far from brilliant; the operative mortality, however, has been greatly reduced; in the Mayo series it is stated to be 5 per cent. In the absence of definite contra-indications, removal seems justifiable if only on the possibility that the growth is benign.

The following case is reported:

Patient. S. W., age 27, white, male. Past history: Fracture of skull in 1928, sinus operation in 1931, tonsillectomy in 1931. Until last two operations had considerable sinus trouble with frequent head colds and considerable post-nasal discharge. History of soft chancre in 1928. He has a good appetite and good digestion, thinks he has lost considerable weight. Family history essentially negative.

For the past six months he has noticed a gradually increasing tumor mass on the right chest wall. He has a pain at times over that area which he describes as a dull ache. He has no cough, no dyspnoea, and no pain on deep inspiration. He tires easily, and exertion, especially of arms and shoulders, exacerbates the pain.

He is a well developed and well nourished young white man, lying quietly in bed. Patient shows no distress. There is a scar over right eye and scar in left occipital region ob-

Fig. 2.—X-ray film of lateral view, showing depth to which tumor invades thoracic cavity.

viously the result of a head injury. On left forehead above orbital region is a small tumor-like mass about size of a large butter-bean; it is freely movable, not tender, soft, and resembles a sebaceous cyst.

Pupils react to light and accommodation, cornea and conjunctiva clear, extra-ocular movements normal. Nose slightly injected at nares, many dry scabs and whitish areas within nostrils, no nasal obstruction. Teeth fair, upper teeth widely spaced, gums receded.

The chest moves freely with expansion; normal pulmonary resonance except in posterior

chest below 8th interspace right. Increased dullness in area covered by tumor from 2nd intercostal space to 4th intercostal space. Diminished vesicular breathing in posterior chest, right side below 8th rib, vocal resonance diminished in same area, no rales.

There is a firm non-tender tumor mass which is adherent to underlying tissues and probably to bony chest wall. The tumor is about the size of an orange and extends from the second intercostal space to the 4th intercostal space in the mid-clavicular line. It is immovable.

Abdomen negative, reflexes normal.

Urinalysis is negative and blood counts within normal limits. The blood Wassermann is negative.

X-ray report January 29, 1932. "The palpable mass on anterior chest wall extends into thoracic cavity to a depth of about three inches. It is my opinion that it has displaced the pleura and that it is more or less encapsulated in the pleura. Impression probably a sarcoma having its origin in the anterior osseous portion of the third rib and its cartilaginous attachment."

Operation February 3, 1932. Ethylene-nitrous oxide-oxygen-carbon dioxide. Pressure anesthesia not available. Resection of 2nd, 3rd, and 4th ribs, right side, mass with involved area of pleura lifted out. When pleural cavity was opened, lung collapsed with moderately severe symptoms, pulse became weak and rapid, slight and transitory cyanosis, and markedly disturbed respiration. This was controlled by closing the opening with towels which seemed to minimize the shock and control the situation until traction sutures could be placed in lung. These traction sutures were then used to lift lung against cut edges of the pleura. The pleural cavity was then aspirated and closure made as air tight as possible by covering the defect already blocked by lung tissue with the reflected pectoral muscle. The patient was returned to the ward in good condition with little respiratory embarrassment. Pulse range during operation 88-100-120, respiratory range, 28-36 to 40.

X-ray study made February 8, 1932, five days after operation, shows some clouding throughout right base.

Medical consultant on February 9, 1932, makes clinical note as follows: "Patient apparently in good shape, resting very quietly, right chest front hyper-resonant with some crepitation under skin. Some air coming through upper portion of lung-back, tactile fremitus absent, dullness from apex down fading into a flat note at angle of scapula, remaining flat to base, no breath sounds heard over back except at extreme apex. Impression front of lung collapsed with probably fluid at right base."

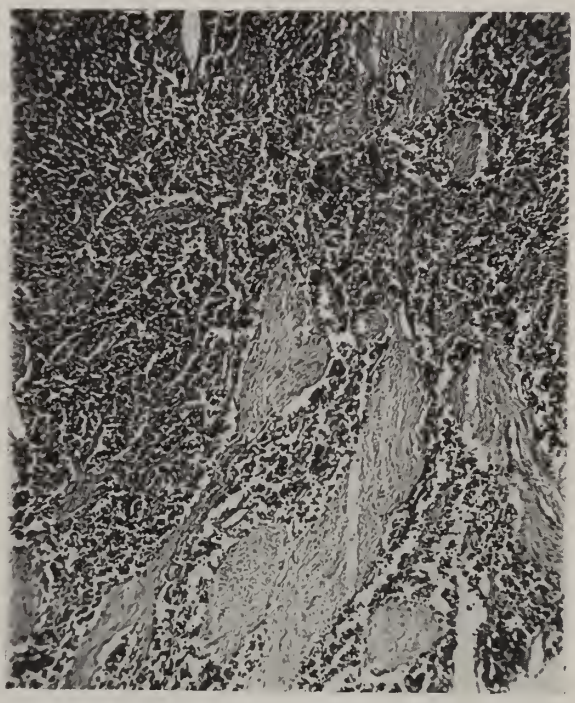

Fig. 3.—Photomicrograph of field showing masses of tumor cells lying between trabeculae of fibrous tissue.

The pathological report was as follows:

Specimen Consists of Tumor. The tumor is conical in form, measuring 85 mm. in length and 55 m. in diameter. The tumor is firmly attached to one rib, most of the growth extends into the pleural cavity from the posterior surface. There is also a slight anterior growth to the thickness of 8 mm. The tumor appears to be encapsulated. It is pinkish grey in color, and the most of it is soft in texture. There are multiple very soft areas. There is a partly calcified portion on the posterior surface of the rib. This is 40 mm. in diameter and 15 mm. in thickness. Portions of two other ribs were removed but they were not involved by the tumor.

*Microscopic Examination:* Sections from the soft portions of the tumor show large masses of tumor cells lying between branching trabeculae of fibrous tissue. The cells are small and polymorphous. The nuclei are deeply stained,

and there is little cytoplasm. The cells adhere to the stroma rather than cohering with each other. There are relatively few mitoses. A section from the anterior portion of the tumor shows the same type of cells with a fibrous tissue capsule. The latter contains deposits of calcium salts in the meshes. Sections from the calcified area, attached to the posterior surface of the rib, show even more calcification. Definite trabeculae of bone have been formed. Between them lie masses of tumor cells.

*Laboratory Diagnosis:* Osteosarcoma of the rib.

L. J. M., Pathologist

While patient was in hospital convalescing from the operation he was turned over to the X-ray department for therapy. On February 20, 1932, he was discharged apparently in good condition. He left town shortly after this and our efforts to keep in touch with him were unsuccessful.

In September he entered the United States Marine Hospital at Norfolk. He stated that

Fig. 4.—Photomicrograph showing same undifferentiated tumor cells as well as calcified area of new bone formation.

as early as May he had noticed a recurrence of the mass in his right chest, and this gave some pain and discomfort. On admission he complained of excruciating pain in the head, particularly in the right temporal region. X-ray study at this time showed diffuse neoplastic involvement of the right chest and extensive metastatic involvement of the calvarium.

The patient died October 5, 1932, and autopsy was performed by A. A. Surgeon Oscar Harmos, Pathologist, on October 7, 1932. Through the courtesy of Surgeon S. L. Christian, Medical Officer in charge of the U. S. Marine Hospital, Norfolk, Va., I have the privilege to incorporate in this report a summary of the findings made at this most complete and exhaustive autopsy.

"Case represents a very malignant tumor, which is rather difficult to classify. It is probably a round cell sarcoma of the bone marrow, which is called myeloma. The tumor was frequently formed in soft diffuse and rather loose masses by large cells which were more or less hyperchromatic, ovoid or polyhedral, and of varying size. The cells usually showed a single large nucleus and occasional mitoses. At places the tumor islands were divided by connective tissue septa. Hemorrhagic and necrotic areas were frequently noted in the tumor.

The primary location of the tumor was probably in the right second and third ribs. A part of these ribs had been removed at an operation of a tumor of the right chest.

Other locations of the myeloma were as follows:

Tumor of the right parietal bone. It is not impossible that the neoplasm appeared at this place simultaneously with the rib tumor.

Tumor of the cerebral dura mater probably originated through extension from the skull tumor. Both of the mentioned new growths showed an apparent alveolar or rosette arrangement.

Large extension tumor of the soft tissues of the right pectoral region. Large multiple tumor of the right lung and pleura originated through extension. Small subcutaneous nodule of similar character located in the left para-sternal line.

Large subdiaphragmatic tumor due to metastasis or to direct extension. Small metastic tumors of the mesentery.

The left kidney contained a tiny cortical papilloadenoma."

In conclusion I wish to express my sincere thanks to Drs. Christian, Harmos, and W. L. Smith of the U. S. Marine Hospital for the privilege of following this case during his stay in that institution, to Drs. L. F. Magruder, and C. W. Eley for their cheerful assistance with X-ray studies, and to Dr. L. J. Motyca, Pathologist at the Protestant Hospital.

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504 *Medical Arts Building.*

DISCUSSION

DR. C. LYDON HARRELL, *Norfolk:* The case reported by Dr. C. C. Smith was very interesting from two aspects. First, its rarity, as literature reveals only 238 cases on record. Secondly, its degree of malignancy.

C. A Hedblom, Lewis and others report that seventy per cent of tumors of the sternum and ribs are malignant. This was an exceedingly malignant tumor. Pictures of the chest, taken in February, did not show any evidence of metastasis to the lung or bony structures. The pictures made in September showed a very extensive metastasizing to the lung and bony structures. From this observation it is necessary to make an early diagnosis and remove as early as possible. I think a quotation from Dr. Hugh Taylor is in order, in lecturing on cancer of the breast, in 1928, he stated, "cut early, cut wide, cut deep, cut with the ebb flow of the lymphatics."

I do not think it is wise to tamper or procrastinate with tumors about the face or thorax. They should be referred to a surgeon. At the time of operation, in removing these tumors of the bony thorax, I think it best to use a gas machine that has a high pressure apparatus attached. In case you should have a sudden collapse of the lung, records show they usually die from shock. If the lung is kept inflated, many of these deaths might be avoided.

I wish to thank Dr. Smith for his interesting report on this case

DR. I. A. BIGGER. *Richmond:* There is one point I would like to make before I show slides of a very interesting case we have had recently. From my experience it seems to me that these tumors are more common than one might judge from the number of cases reported in the literature. We see them, not frequently, but certainly not very infrequently.

About a year ago we had a case of tumor of the seventh rib which interested us because it was the earliest malignant tumor of the rib we have seen. It occurred in a white girl twelve years of age, who was first seen by Dr. Henry S. Stern, of Richmond. While getting out of a car she struck her side against the door and at the time she noticed a cracking sound and felt some pain. It was thought that she might have fractured a rib, so an X-ray examination of the chest was made and the tumor discovered. She was given one X-ray treatment, without noticeable change in the appearance of the tumor, so was advised to have the rib excised.

Dr. Bigger then presented three slides, as follows:

1. Showed only a slight dilatation of the cortex of the rib. No fracture could be demonstrated.

2. At operation a considerable segment of rib was removed, with the periosteum and intercostal structures. We found we were closer to the tumor than we liked. so we went back and removed an additional inch of rib and periosteum. This slide showed the tumor occupying the marrow cavity and causing slight dilatation of the cortex of the rib.

3. The microscopic section showed osteogenic myxofibrosarcoma.

It is too early to know the outcome in this case, but so far there is no evidence of recurrence.

## SUBACUTE BACTERIAL ENDOCARDITIS FOLLOWING EXTRACTION OF TEETH WITH REPORT OF TWO CASES.*

DOUGLAS VANDERHOOF, M. D.,
and
DEWEY DAVIS, M. D.,
Richmond, Va.

During the past few years we have been impressed by the number of serious complications which have followed relatively simple operative procedures in the oral cavity, the throat and the upper respiratory tract. A short time ago a physician brought his aunt to the office for an opinion on her heart and lungs prior to a scheduled tonsillectomy the following day. She was a very small woman, in her late fifties, who had no particular complaints except she weighed only 82 pounds, she lacked energy, and on several occasions small amounts of pus had been expressed from her tonsils. The opinion was expressed that she was a good risk for tonsillectomy, but her nephew was told that we could see no reason for the operation except that her family and her otolaryngologist thought they should be removed. She had the tonsils removed under local anesthesia and three days later developed a severe lung infection from which she died in about ten days. This recent case has brought to mind a considerable number of other instances of such complications.

All of you can probably recall cases of cellulitis and other local infections subsequent to dental operations. The following two cases are instances of fatal illness which has followed the extraction of infected teeth.

*Case 1.*—Mr. P., age 56, was admitted to the Johnston-Willis Hospital August 14, 1931.

He complained of fever.

His family history was negative. He was found to have an apical systolic murmur in 1918, and for years had been dyspneic on exertion. Otherwise his past history was negative. He had had no operations.

On June 30, 1931, he had two badly abscessed teeth extracted without unusual difficulty. Four days later he consulted his local physician because he felt badly all over. During the next few days he was found to have slight fever which increased in degree until by the middle of July it went to 102° in the afternoons. With this he had no special symptoms except lassitude. The remaining teeth were in bad condition and these were removed. Three

*Read before the sixty-third annual session of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

total leucocyte counts varied between 11,000 and 17,000 with an increase in the polymorphonuclear leucocytes. Blood cultures and agglutination tests for tularemia, malta fever and the typhoid group were reported negative by the Laboratory of the State Board of Health on August 10th.

On admission to the hospital his temperature was 103°, and he was perspiring freely but did not seem particularly uncomfortable. Had no pain.

Physical examination: Patient was fairly well nourished. No dyspnea or jaundice. The pupils reacted and the conjunctivae were clear. Certain areas of the gums had not entirely healed, but were in satisfactory condition. No glandular enlargement. A few petechiae were noted over the abdomen but no other embolic phenomena in the skin. The reflexes were normal.

Pulse 140; blood pressure systolic 112, diastolic 66. The heart appeared slightly enlarged to percussion. A definite systolic thrill was palpable at the apex and over this area the first sound was replaced by a harsh systolic murmur which was transmitted outward to the axilla. The lungs were clear. Abdominal examination was negative, the spleen not being palpable.

The urine showed a distinct cloud of albumin and microscopically a few red blood cells. Leucocyte count 10,500; polymorphonuclear neutrophiles 83 per cent. Blood chemistry normal and Wassermann reaction negative. Two blood cultures gave a heavy growth of streptococci which on sub-culture proved to be of the viridans type.

He was treated with stock streptococcus immunogen and an autogenous vaccine, but steadily went down hill until he died at his home about the middle of October, 1931.

*Case 2.*—Mrs. O., age 48, was seen in consultation January 12, 1930. She complained of fever. Prior to present illness her general health had been good except for an increased blood pressure of ten years' duration. This had been as high as 238 systolic. There was no history of rheumatic fever.

Her present illness began October 1, 1929, with a chill followed by fever. She was thoroughly studied at a hospital in North Caroline but no cause could be found for her symptoms.

She was brought to St. Luke's Hospital on December 30th with the idea that she might have some surgical condition but none could be found. Four blood cultures were positive for streptococci which was identified as the viridans type. Her blood showed hemoglobin 55-60 per cent, r.b.c. 3,500,000, w.b.c. averaged 8,000, and differential showed moderate increase of polymorphonuclear leucocytes. The urine was negative except for occasional erythrocyte and leucocyte.

Her heart was enlarged and showed a loud systolic blow at the apex. Several weeks before the tips of several fingers were sore and for four days she had complained of pain over the region of the spleen, increased on deep breathing.

No cause could be found for her streptococcic infection except that four or five weeks before onset of symptoms she had had a badly abscessed tooth extracted and this was attended with considerable difficulty.

This patient was not followed but it is understood that she died about three months after she was seen, having followed the usual course of subacute bacterial endocarditis.

Of course, it is not proved that either of these patients would have remained well had their teeth been left undisturbed, nor can we say that the metastatic infection had not taken place prior to the dental operations. However, it seems plausible that the trauma incident to the extraction may have released organisms into the blood stream. A survey of the available literature shows at least nine instances in which subacute bacterial infection of the heart has followed promptly the extraction of infected teeth, and numerous references are available where acute cellulitis and acute septicemia, fatal or non-fatal, have been unquestionably the result of infection stirred up by dental operations.

At this point it might be well to review some of the clinical features of subacute bacterial endocarditis. This disease in about 95 per cent of instances is due to the streptococcus viridans; with the majority of the remainder, the result of infection with the influenza bacillus. These cases run a protracted course from three months to two years or more. In the early stages the diagnosis may be difficult, the patient being up and about. He complains of malaise, weakness, palpitation, loss of weight and slight fever. The situation may be easily confused with tuberculosis, undulant fever,

and even thyrotoxicosis. More acute cases may resemble typhoid fever. Later in the disease, certain clinical features develop which make the diagnosis unmistakable. Various manifestations of embolic phenomena appear. In the brain these give rise to motor or psychic disturbances; in the kidneys to albumin and blood cells in the urine; in the spleen causing it to be enlarged and tender. Tender spots and petechiae occur in the skin and tender subcutaneous nodules and retinal or subconjunctival hemorrhages may develop. The heart shows either an aortic or mitral murmur, or both, which increases in intensity from week to week.

A positive blood culture in the presence of the above symptoms clinches the diagnosis. We wish to emphasize that this culture may have to be taken repeatedly and the cultures should not be discarded as sterile until after two weeks of incubation. Another feature which should be emphasized in discussing the diagnosis is that this infection is usually implanted on a heart valve previously damaged by rheumatic fever, or occurs in the presence of congenital heart disease.

The portal of entry for the organisms may be any infection which harbors them, probably most commonly the tonsils or teeth. However, we may say at this point that eradication of all existant foci of infection will have no effect on the course of the disease once it is established.

The prognosis in subacute bacterial endocarditis is almost invariably bad. We have seen one individual with an aortic lesion, low fever and one positive growth of streptococci in the blood culture which died out before it could be identified, who has remained in good health for five years except for persistent aortic regurgitation. Of the cases reported in the literature, about 3 per cent have recovered and autopsy reports on people dying from other causes occasionally show typical healed lesions.

No particular treatment has been effective. Autogenous and stock vaccines, antistreptococcic serums, transfusions, and various antiseptics intravenously have been tried. In 1923, Capps made a very enthusiastic report on the use of large doses of sodium cacodylate intravenously but this treatment has been ineffective in our hands and that of others. In the reported recoveries, about as many have gotten well without as with specific treatment.

General supportive treatment with a high caloric diet as is given for tuberculosis, rest in bed and proper elimination are probably the best measures.

These facts should make us cautious in advising the extraction of teeth which are condemned because the root canal has been filled or because they show changes on the X-ray film. Alvarez has aptly said: "It is one thing to order a dozen extractions when a man lies crippled with an acute or chronic arthritis, and another to order them because he feels nervous, has no energy, has indigestion, or has pimples on his chin." The same thing may be said for removal of the tonsils.

*Professional Building.*

### Discussion

Dr. T. Dewey Davis, Richmond: There is very little I can add to the discussion of this subject as Dr. VanderHoof has given it to you. There is one point, however, that I should like to stress, and that is in the diagnosis of these cases of subacute bacterial endocarditis it is quite essential that the blood cultures be made repeatedly, in a good many instances, and that the blood cultures be kept for a good long time. We have had cultures become positive after five or six days, or a full week. I wish, therefore, to emphasize the importance of keeping the cultures for at least a week.

I also think it is a very good plan, in observing these cultures, to stay out of them until there is some evidence of growth, because of the possibility of contaminating them. We usually look at them on the second day, and if there is no growth we do not disturb them. On the third or fourth day they are examined microscopically even though no growth is evident.

I want to report a rather interesting incident. Dr. VanderHoof gave you the history of a patient whom we saw last August with typical subacute bacterial endocarditis who went on to death in October. On Monday of this week this man's brother came to the office with a history of fever since June of this year. He was taken ill in another state, and a diagnosis was made of typhoid fever. We bave not been able to get the facts exactly, but there is the statement that two blood cultures were positive for the typhoid bacillus. However, there is the impression that these might have been Widal reactions, and at his examination he had positive Widal reaction. At any rate, he did not get well of the typhoid fever. We saw him on Monday, when he was obviously a sick man. He had a rather gross mitral lesion. In a letter his brother-in-law, who is a doctor, stated that this mitral lesion was present in June; he had no idea how long it was present before. At any rate, blood cultures have grown abundantly streptococcus viridans. He has undoubtedly subacute bacterial endocarditis, as his brother had, and the chances are that he will not survive very long.

As we all know, these cases are practically hopeless; there is little we can do for them; but we should give them any treatment which offers a possibility of benefit.

Dr. W. E. Brown, Sanatorium: Gentlemen, I think that Dr. VanderHoof's paper is a very interesting

one. I have for a good many years felt that the common practice of local anesthesia for the extraction of teeth is against every principle of surgery. Taking a power syringe and injecting the anesthetic around an abscessed tooth must of necessity force the bacteria through the abscess wall back into the soft tissue and alveolar structure of the bone, resulting in many instances in severe local inflammation. We have had a resident dentist at Blue Ridge Sanatorium for the last ten years, and we have tried to clean up the mouths of all patients who showed abscessed teeth. I have always insisted that no local anesthesia be used, but that conductive anesthesia, the so-called blocking of the nerve at its entrance into the jaw be made a routine practice. It had not occurred to me that septic endocarditis might be the result of local anesthesia, but it is plainly evident to me now that that was probably the way in which the infection was introduced into the blood streams of Dr. VanderHoof's cases.

Dr. VanderHoof, closing the discussion: Mr. Chairman, I am very sorry that Dr. C. C. Coleman could not be here. He expected to come, and told me he particularly wanted to discuss this paper from the standpoint of the technic in oral surgery.

Subacute bacterial endocarditis is a disease with a great many interesting features. The question arises, of course, whether it ever occurs in a person who has a normal, healthy heart. In most instances the acute process, or vegetative endocarditis, is engrafted on heart valves that have been already scarred and damaged by previous forms of more simple endocarditis. If a healthy individual has some dental work done and happens to develop a blood-stream infection following such operative work, it may turn out to be a relatively mild affair from which he will eventually recover, or it may go on to a fatal sepsis. But if that patient happens to have a heart crippled by valvular disease, it is quite possible that a blood-stream infection with the streptococcus viridans organism will settle upon the damaged heart valves and give rise to very typical subacute bacterial endocarditis.

## A NON-OPERATIVE TREATMENT FOR DELAYED UNION IN THE TIBIA.*

DONALD M. FAULKER, M. D., Richmond, Va.

A bugbear in the treatment of fractures is delayed union and its too frequent consequence, non-union. In spite of the many advances in fracture surgery since the World War, the number of cases of delayed and non-union seem to be increasing.

Probably this is true because of the absolute increase in the number of broken bones and the relative increase in the number of severe fractures. We continue to call fractures compound and simple, but the simple, uncomplicated fracture is becoming a rarity in this age of automobiles and machinery. To one who sees many of the comminuted, crushed or shattered bones which result from an automobile accident, the bone which has one line of fracture as the result of a single trauma is a relief. The severe soft tissue injuries which accompany these complicated fractures undoubtedly increase the incidence of non-union and of delayed union. Naturally the process of repair is usually less smooth also in compound fractures than in those not compounded. Here to extensive soft tissue injury is often added the complication of infection.

Yet, doubtless the chief causes of non-union of fractures are two for which the surgeon is primarily responsible. They are, first, failure to reduce the fracture properly, and, secondly, failure to maintain their position after the fragments have been properly placed in contact. Proper reduction means early reduction, as full contact as possible between the ends of the fragments, alignment as near as possible to the anatomical, and engagement of the fragments to prevent loss of the position obtained at reduction. Then this position must be maintained by some apparatus until sufficient callus has formed to insure protection of the bone from normal stress and strain. We sometimes err in one or both of these requisites in the treatment of fractures, and non-union may be the result of the error.

However, there are a certain number of cases in which delayed union or non-union occurs due to no error in treatment. Perfect reduction has been accomplished, the correct position of the fragments has been efficiently maintained for that period of time usually sufficient for solid union, and the organism has failed to do its share and form callus. These failures after proper treatment are most frequent in the humerus and in the tibia.

Heretofore in such cases open operation, with freshening of the ends of the fragments and usually fixation with a bone graft, has been our means of obtaining union. This requires an additional period in the hospital and prolongs the time of disability.

During the past year we have attempted another method of treatment for delayed union in fractures of the tibia which has proved so successful that we feel justified in describing it to this Society. I intentionally say that this treatment is for delayed union, because I believe that true non-union is a very different problem and requires in most cases the use of a massive bone graft for cure. One of our cases, however, which promises a successful result, was seemingly a problem of non-union, rather than of delayed union.

The method is not original with us, but is used routinely in the treatment of fractures of

*Read before the sixty-third annual meeting of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

the tibia in Bohler's Clinic in Vienna. Bohler believes that its routine use, in addition to promoting union, improves joint function and tends to restore normal circulation in the limb, with both of which statements we are in agreement. Certainly less swelling and disability is present after the use of this apparatus than in cases we have treated previous to its use. It is probably the improved circulation of the limb which is largely responsible for the stimulation of callus in delayed union of the tibia.

A light, snugly fitting unpadded plaster cast is applied from the toes to the level of the upper end of the tibia, or, if the fracture be in the upper third of the leg, the plaster extends above the knee. No padding is used except a little about the heel and the malleoli. The plaster bandages are applied directly to the skin, care being taken to avoid all wrinkles in the bandage. The direct application to the skin not only makes a snug fit, but also gives additional fixation as the hairs are actually incorporated in the plaster. The cast is modelled closely about the malleoli and especially well about the tuberosities of the tibia, as this is where the weight is chiefly borne. When the plaster has set lightly, the walking iron is applied. This consists of a malleable iron bar, bent into the form of a flat-bottomed U, long enough to reach from about 1¼ inches below the plaster sole to just below the tuberosities of the tibia, with a horizontal bar at each end whose length is roughly one-fourth of the circumference of the upper portion of the cast. This iron is shaped to fit snugly against the plaster cast in the long axis of the leg, being offset slightly at the ankle, and is then incorporated in the cast with one or two more plaster bandages. As soon as the plaster is hard, weight bearing is encouraged, preferably with a cane only.

The apparatus is not foolproof. The cast must be smooth, with no wrinkles against the skin to cause pressure and sores. It must be evenly moulded to the contour of the limb and it must fit snugly. It should be light in weight, yet strong enough to prevent yielding at any point. The patient on whom such a plaster is put must be seen daily for the first few days to guard against mishaps. Occasionally some soreness is complained of at the site of the fracture, but in our experience this is rare. If there is persistent pain, the plaster should be changed.

During the past year we have treated thus twelve patients. In only one has there been a failure to obtain union, while another is still under treatment with every evidence of ultimately obtaining a good result. The patient with whom the treatment failed had the first plaster applied by us and his physician then cared for him. When X-rayed after eight weeks walking, callus was seen to be forming, but the treatment was stopped and we do not know what therapy was instituted.

The average period of wearing the walking plaster has been thirteen and one-half weeks. During this time, several of the cases have returned to light work, which would have been impossible if an operative procedure had been the treatment.

Brief case reports with slides of the X-ray films before and after treatment will now be presented.

*Case* 1. (No. 15069)—J. R., male, age 37. Automobile compound fracture right tibia, November 23, 1930. Left leg artificial. Plaster cast since injury. On examination motion still present, position 25 per cent outward and backward displacement of lower fragment. Irregular callus about the false joint, but no bridging. Had heliotherapy, massage, cod liver oil with little improvement and bone graft was anticipated. Walking plaster February 25, 1931. Good union July 13, 1931. Walks without support (five months treatment).

*Case* 2. (No. 15765)—L. W., male, age 33. Compound fracture both bones of right leg by automobile January 5, 1931. April 1st, union not present. Walking splint applied April 1st. Left off August 17th. X-ray shows improved callus formation. Last seen September 14th. Good firm union with good function (four and one-half months treatment).

*Case* 3. (No. 15900)—N. W., male, age 22. Compound fracture both bones of right leg, sustained when a packing case weighing 600 pounds fell on his leg, June 11, 1931. X-ray after cast for twelve weeks does not show union and examination shows motion between fragments with pain. Walking plaster October 5th. Plaster left off November 20th. Firm union and good function (seven weeks treatment).

*Case* 4. (No. )—F. S. J., male, age 35. Simple fracture both bones of left leg from motorcycle, July 26, 1931. Immediate reduction and plaster cast. October 19th, examination shows motion and pain at site of fracture of tibia, and X-ray October 7th, shows very

little callus formation. November 2nd, walking plaster was applied. X-ray December 7th shows union progressing nicely, but the walking plaster was continued until January 4, 1932. It was then removed and clinically firm union was present. Patient now walks well without pain and function is good (eight weeks).

*Case* 5. (No. 16144)—Stephens, age 43. Compound fracture, middle left tibia, with three fractures of fibula, caused by automobile, October 9, 1931. No union December 11th. Walking plaster with firm union March 11th. (No union after nine weeks. Union after eleven weeks walking.)

*Case* 6. (No. 16052)—Hamm, age 20. Compound fracture, right tibia and fibula, middle third, caused by automobile, August 17, 1931. Skeletal traction followed by plaster cast. No union November 18th. Walking plaster to April 9, 1932. Firm union. (No union after fourteen weeks. Union after twenty weeks walking.)

*Case* 7. (No. 16084)—Clarke, age 28. Compound fracture, middle third, left tibia and fibula. Debridement and Orr treatment October 19, 1931. No union January 19, 1932. Sequestrectomy and walking plaster January 19th. Firm union June 16th. Union after walking plaster for twenty-one weeks.

*Case* 8. (No. 16088)—Mrs. H. G., age 72. Automobile compound fracture, right tibia and fibula, middle third, October 15, 1931. No union January 26, 1932. Walking plaster February 5th. Firm union April 29th. No union after sixteen weeks. Union after walking plaster for twelve weeks.

*Case* 9. (No. 15999)—Mrs. Rosenstein, age 49. Compound fracture upper third of left tibia and fibula. Debridement and reduction October 6, 1931. No clinical union December 29th. Walking plaster. Firm union February 10, 1932. No union after twelve weeks. Firm union after walking plaster for six weeks.

*Case* 10. (No. 16385)—Sechler, age 18. Simple fracture, middle of right tibia, by automobile September 21, 1931. No union when referred for bone graft March 21st. Walking plaster then applied and referred back to his physician who applied another. Left off by him June 28th, although X-ray showed some callus forming. *Failure.*

*Case* 11. (No. 16466)—Aldridge, age 24. Compound fracture of left tibia and fibula in lower half, from automobile injury, December 21, 1931. No union April 8, 1932. Walking plaster April 8th. Firm union June 15th. No union after fifteen weeks. Union after nine weeks of walking plaster.

*Case* 12. (No. 16587)—Slaughter, age 59. Compound fracture of right tibia and fibula in upper half, caused by automobile, December 31, 1931. X-ray May 5, 1932, showed no union and clinically there was none. Walking plaster May 9th. X-ray September 8th, shows very marked improvement, but walking plaster continued.

### Discussion

Dr. J. T. Tucker, *Richmond:* I think Dr. Faulkner has brought to our attention one of the most serviceable appliances now in use in the treatment of fractures. It is comparatively simple, that is, with a little plaster and an iron stirrup we get remarkable results in the treatment of acute fractures as well as delayed union, or, perhaps non-union. Routinely, in many of these fracture cases of the lower leg, we use this appliance, and delayed unions are seldom ever seen Over the past two years many of these delayed union fractures have come to us and we have put on this simple apparatus, allow them to bear weight, and soon union occurs. With your permission, Mr. Chairman, I would like to show you one of these cases of delayed union with this appliance. This gentleman, Mr. Slaughter, was in an automobile accident in the middle of December, 1931. He sustained a fracture between the middle and upper third of the tibia, which was reduced and a plaster cast applied from his groin to the toes. He stayed in this plaster for four months, at the end of which time there was no clinical firmness of the fracture, nor was there evidence of callus seen in the X-ray. After cleaning his skin for a period of five days, we put on one of these walking plasters, which he has worn since that time. These plasters have been changed at intervals of about three months and an X-ray taken at each time, the last one being one month ago, which showed a condition of callus at site of fracture. Clinically, he feels firm and I have no doubt that union is now taking place. I am in hope that the next time we take an X-ray of his leg, which will be around January 15th, there will be enough callus to say that there is firm union.

These cases shortly after the walking plasters are applied walk without the aid of crutches or cane, and with such a serviceable appliance many cases can be restored to their former duties shortly after fractures occur.

I have enjoyed Dr. Faulkner's paper very much, and I think his remarks are worth being considered by all surgeons who treat fractures.

Dr. J. B. Dalton, *Richmond:* I have not had the experience Dr. Faulkner has had with this method of handling delayed union of fractures of the tibia. I am one of the later or more recent men to begin this method of handling these cases. Dr. Faulkner's work has been the cause of my becoming interested in this method.

I am beginning to try this method in fractures of the tarsal bones, particularly the os calcis. I have not had sufficient time to give a report and am merely giving this as a preliminary hint. It seems practical to believe we shall shorten our convalescence in fractures of the tarsal bones on the

same principles as have been set forth in this paper for handling fracture of the leg bone.

Dr. J. Bolling Jones, *Petersburg:* I think there is nothing which I dislike more to come up in my practice, or in which I feel more like shirking my responsibility, than such a case as was shown on the screen a minute ago. There is one particular question that always occurs to me in fractures, which is evident, of course. To me the condition of the soft parts and the matter of infection are a very much more striking thing to take care of than the fracture itself. It is a question, first, of playing for the life of the individual, and playing for the leg—some kind of leg. The thing that bothers me most is how long we can wait before any attempt at permanent fixation with safety to the soft parts, and when the dangers of infection are at an end. In this particular case the soft parts were horribly damaged; there was an enormous compound wound on one side of the leg. The circulation in the foot was very poor; you could hardly get any at all. I simply forgot the fracture for a few days and played for the soft parts and to get rid of the infection. There was a thorough debridement made, one or two little parts taken out, the wound thoroughly iodized, and the leg put in a simple pillow splint. Of course, it was dressed antiseptically as thoroughly as we could, and no attempt made at immobilization of the fragments at all. It strikes me, if any infection is going to occur, it will occur within the first four or five days. I want the advice of these gentlemen. I have rushed over here to hear this paper. Dr. Faulkner said in his paper early reduction. I want to know what he means by early reduction. In that case the fragments were put in as good shape as I could, with no extension whatever primarily, but simply laid in this pillow splint, with antiseptic treatment of the wound. As I recall, it was possibly, I think, on the eighth day that I attempted permanent immobilization or adjustment as best I could. Those fragments were lying all kinds of ways when it came to me. It was probably on the eighth day, under anesthesia, when the fragments were put in position as nearly as I could, and then a permanent plaster cast was applied, with a single spica extending from above the hips down to and including the entire leg and foot. I think about the third or fourth day we cut a window in the cast over the point of compound fracture and that wound, and it was found perfectly clean, and with a granulating surface. In other words, I had nothing more nor less than an ordinary leg ulcer. That window represented a wound two and a half by two inches, I would say. Our interns (one trained in Oklahoma and the other in New Orleans), began to use all kinds of antiseptics to try to heal that compound wound. I have had several of these cases like that, and I treat them simply by leaving enough space between the wound and the cast to apply adhesive plaster, and it is perfectly marvelous how quickly you can grow new skin over that compound wound. There is nothing that gives me more satisfaction than treating an old leg ulcer—a thing which most men hate to see. This was the same thing, and I was able to close the compound wound absolutely. That cast stayed on for four or five weeks, when, according to Dr. Clarkson's X-ray report, there was some union, but not firm. I derive great pleasure in turning cases over to my friends here, and did so in this case. As you remember, he spoke of the small callus. About six weeks ago he was sent back to me with the note that it was felt that this little piece of callus ought to come out. At that time apparently an ulceration was going to occur over the site of this sequestrum; and I thought, as they did, that the thing was going to extend through. But, to my amazement, it proved to be an entirely local infection; that little sinus that was going to come there has healed up. Today, Doctor, the results are much better than you think. The man's leg is perfectly firm, and I doubt whether anybody will have to go in there.

Dr. A. M. Kimbrough, *Norfolk:* I am wondering if, in the emphasis given to the stirrup, we do not possibly lose sight of a very important fact which the speaker mentioned. He said that this thing is a matter of physiology. I think it is observable in his slides that those pre-stirrup pictures showed a leg which was larger than the one that had the cast on. In those same pre-stirrup pictures the muscle fibers were very distinct. Personally, I have never seen an ununited fracture of the lower extremities that did not have a good deal of bogginess and swelling. It is perfectly obvious that you can not have two bodies in the same space at the same time. You can not have a good supply of blood if you have this wet swelling. The cast helps to prevent that. Why can not we use the method earlier, to get a good blood supply? The heart pumps the blood, but we need the action of the muscles to help get it into the venous channels. If this can be done in a manifestly ununited bone, why not anticipate the program and let these cases walk earlier, even with very small calluses? I rather feel that we can save a lot of time and a lot of cases if we utilize the same idea. Personally, I have used a piece of electrical apparatus which I think is not fairly common; it is termed a condenser discharge. In my hands it is so much superior to the conventional methods of stimulation that I should like to commend it to those who do not know it. It is possible to stimulate any muscle in the leg through a small opening in the cast and to obtain in ten minutes what the average patient will walk in one and a half hours I think it has been very helpful, and I believe this method Dr. Faulkner has shown will be of great value in preventing unnecessary and unprofitable operative efforts.

Dr. Faulkner, closing the discussion: I want to thank the gentlemen for their discussion of the paper.

In answer to what Dr. Jones said about the early reduction, I think you will have to take my statement about early reduction being necessary with several grains of salt. In his case he did "early" reduction, although it was eight or ten days after. You have to pay attention to the soft parts first of all. The object is to save the leg rather than treat the fracture, and in such a severe case as he has described I think you have to put off reduction for an indefinite length of time.

Referring to the question Dr. Kimbrough brought up, as to what causes this union, I think he is exactly right that it is doing away with the lymph stasis, getting better circulation in the leg. I doubt extremely if this little appliance is necessary. Of course, it does reinforce the cast to a certain extent and does take some of the weight off the site of the fracture and transfer it upward in the leg; but I should not be surprised if the plaster cast, correctly applied, with some spongy substance in the heel to prevent jarring, would do just as well.

I think I need not say anything about Dr. Jones' remark about the treatment of these ulcers in the leg. I think, as he says, adhesive plaster does as well as anything else. Just strap them up, and granulation will take place.

# HAY FEVER POLLEN PREVALENCES IN VIRGINIA: REVIEW OF A SIX YEAR SURVEY.*

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W. RANDOLPH GRAHAM, M. D.,
and
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Richmond, Va.

Early in the modern study of pollen allergy it became evident that the standard botanical reference works on the distribution of plants and their periods of bloom were not sufficiently precise to be relied upon for allergic therapy.[1] Allergists found it necessary to make surveys of their own sections in collaboration with competent botanists. Such collaborative studies have been made by members of The Association for the Study of Allergy, so that today accurate pollen calendars are available for certain sections of the country. These include the calendars for New England by Rackemann and Fernald,[2] New York by Thommen,[3] Buffalo by Parlato, Philadelphia by Clarke, Maryland by Gay and his collaborators, the District of Columbia by Bernton, Virginia by Vaughan, Ohio by Figley, Indiana by Durham, Illinois by Kessler and Durham, Western Tennessee by Henry and Herring, Louisiana by Penfound, Efron and Morrison, Missouri and Kansas by Duke, The Plains Section by Balyeat, Colorado by Waring, Arizona by Watson and Kibbler, the Pacific Northwest by Stier, Hollister and Bonser, Northern California by Rowe, and Southern California by Piness, Miller and McMinn. In addition, Durham has made surveys of forty-two of the larger cities scattered throughout the country.[4]

While the results of the Virginia survey have been reported from time to time in the special journals,[4] the present communication brings the study up to date and is presented in the hope that by making it available for the physicians throughout Virginia it will aid them in their treatment of pollen allergy.

The list of all of the important air borne pollens of Virginia and the Southern Atlantic Seaboard has been published by Vaughan in collaboration with Stahl, Clark and Wodehouse[4] and we shall limit ourselves here to a discussion of only those which are of major importance in the treatment of pollinosis. Since 1927 we have maintained a pollen station on the eighth floor of an office building in the center of Richmond, in which the pollen in the outside air was deposited upon prepared slides and daily counts were made to determine the actual pollen content of the air. During the first year three stations were maintained, one in downtown Richmond, one in the residence section, and one in the city of Ashland. Finding, however, that the counts at all three stations were comparable we discontinued the two latter stations. The central station is still maintained and will be continued.

Ragweed is the most important cause of pollinosis. A study of the ragweed curves in succeeding years is most instructive. (Chart I.) In the neighborhood of Richmond, ragweed pollen usually commences to appear on the slides in small numbers at the beginning of the second week in August. In the middle of the third week the concentration increases and it is usually at this time, between the fifteenth and twenty-first of August, that patients first manifest symptoms. After August 21st, the concentration increases quite steadily until the peak is reached around the 13th to the 15th of September. Following this there is a gradual decline until the end of the first week of October when only occasional pollens are found on the slides. The ragweed season in the vicinity of Richmond therefore runs through the last third of August, throughout September, and pretty well through the first third of October.

There are decided variations in ragweed prevalence from year to year. Durham has shown[5] that probably the most important single factor responsible for variations is the rainfall and other factors influencing growth of the ragweed plant during July. As we shall see, other climatic factors play a part. The lowest curve in the six year period was for 1927, when the highest count for one day was 27 grains per cubic yard of air. This low peak for 1927 may be contrasted with the peak for 1931 of 432, sixteen times as high. That the low count in 1927 was due to quite general seasonal factors is indicated by similar low curves observed in Philadelphia and New York the same year.[6]

As far as the patient was concerned, in 1927 hay fever began as usual around the 20th of August and there were probably almost as many sufferers as usual. Symptoms, however, terminated rather early. This would indicate that the threshold for the production of hay fever symptoms is represented by a pollen count of less than 20. As a matter of fact it

*Read at the sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

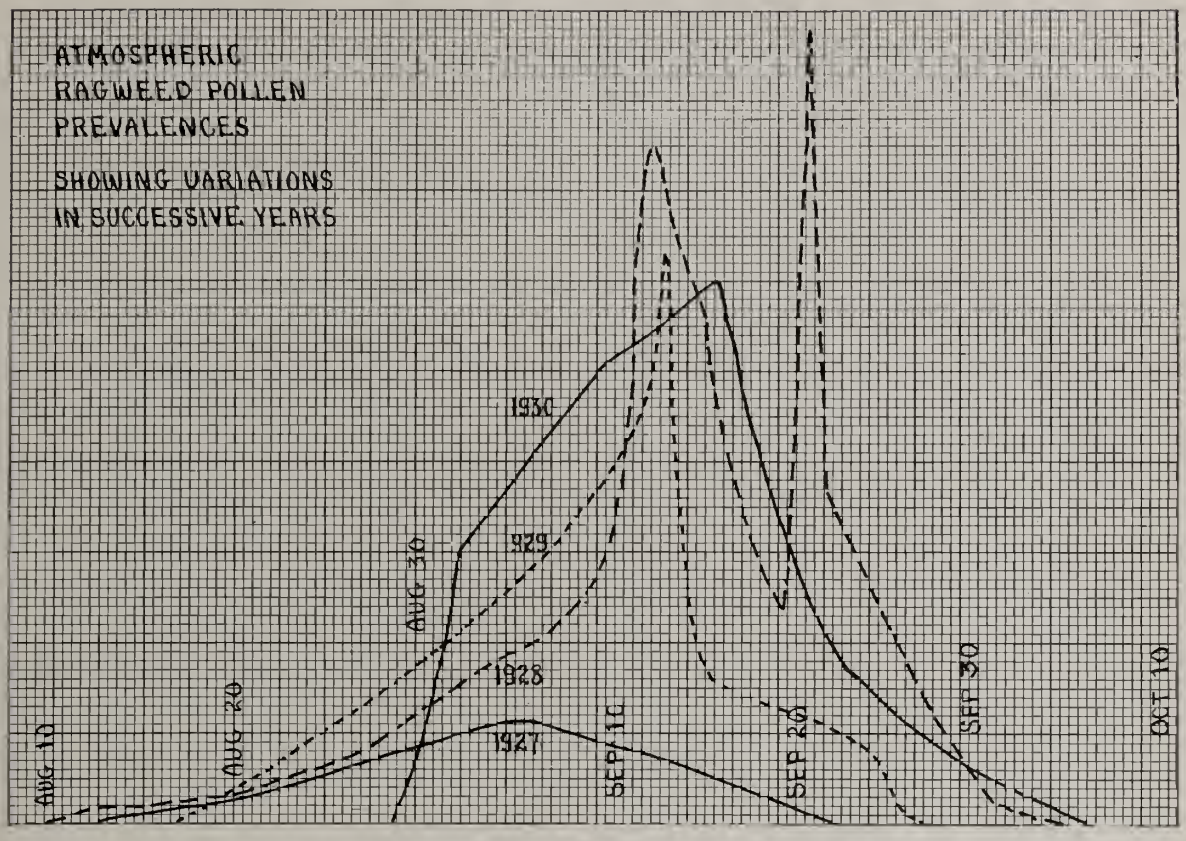


Chart 1.—Variations from year to year. Mean curves. The delay in the start of the 1930 curve was due to the drought of that year. After pollen distribution once started, it continued heavy average.

is decidedly less than 20 as we shall see in a study of the grass curves. We have had patients with ragweed hay fever on days when the pollen count was no higher than 5 per cubic yard. This gives an idea as to what a relatively small amount of pollen is required to produce reactions.

The ragweed curves for 1928 and 1929 may be termed average curves with peaks just before the middle of September, averaging around 150 at the peak, and with some irregularities due to atmospheric disturbances. 1928, for example, showed an abnormal peak on the down curve on September 22nd, due to storm, in which the count reached 200.

The 1930 curve is most interesting. (Chart I.) This was the year of the drought. From August 1st to 28th there was practically no rain. There was also practically no pollen in the air. During the last two weeks of August, hay fever sufferers were elated. When the time for their hay fever passed and they remained free from symptoms they felt that at last they had outgrown the disease. But on August 27th we had a cloud-burst with 1.8 inches of rain precipitated in a few hours. Within three days the ragweed curve started upward and it rapidly rose to a point higher than it had been at the same time of year in any of the preceding years. Hay fever symptoms likewise commenced on September first. There had been a ten day deficit prior to September first but in the succeeding ten days the pollen output almost made up for the deficit. Following this the curve fairly closely approximated the average. It was if anything a rather high average.

We have spoken of storms and droughts and the July rainfall as factors controlling pollen distribution. This is seen especially well in the 1931 curve.

Prior to the 1931 season we had charted the probable mean curve for the year, based on the means of the preceding four years. This is indicated by the dotted line on Chart II. The onset of the curve for 1931 corresponded, and the peak and descending limbs followed the predicted mean with remarkable accuracy. But on the ascending limb we observe a remarkably heavy prevalence lasting over ten

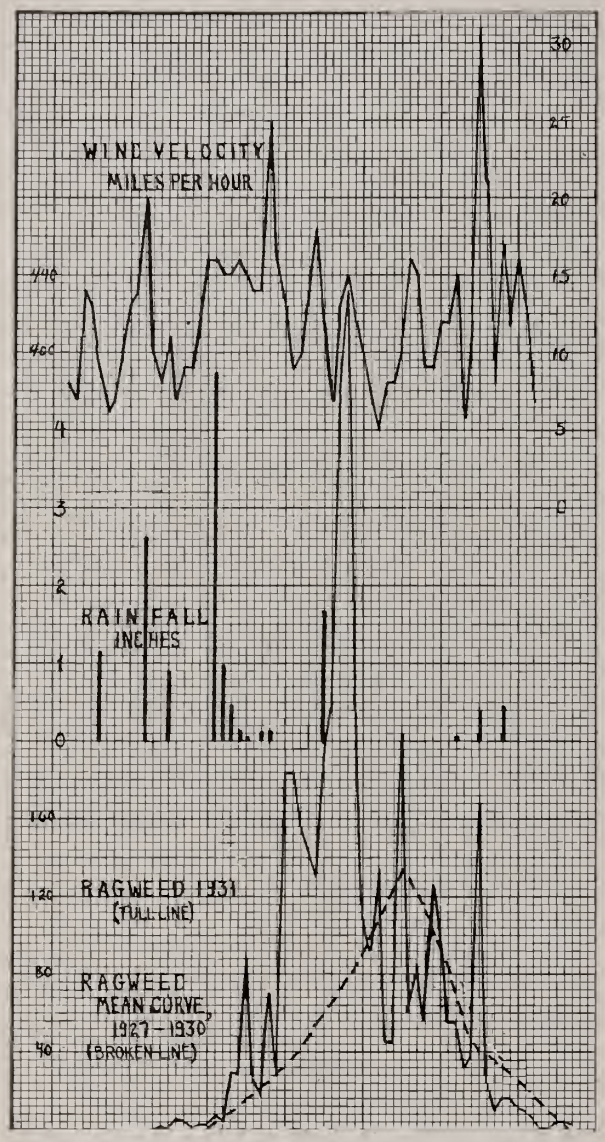


Chart 2.—Showing the effect of high winds in producing an unusually high pollen prevalence in the first half of the 1931 season. Also towards the end of the season. Dotted line represents the mean curve for the preceding four years.

days and reaching, on Labor Day, the highest count, 432, in any of the six years. Many patients, mildly sensitive, who would often go through entire seasons without trouble did experience symptoms during these days of heavy prevalence.

Four factors contributed to this heavy prevalence. First, as we have just seen, the drought year 1931 was accompanied by a heavy average prevalence and presumably by a high consequent fertilization and distribution of seed. Second, July, 1931, had a good rainfall, 4.47 inches, and good growing facilities, favored by an average temperature of 80 as contrasted with the usual mean of 78. Third, August, 1931, recorded the heaviest rainfall since the Weather Bureau was opened in 1872, 11.42 inches. There was adequate water but not enough to destroy growth. Fourth, and this is the chief factor determining the dates of the heavy concentrations, there was a heavy period of storm inaugurating this period. On August 20th we find a storm with a precipitation of 4.74 inches of rain, and some rain continued throughout a week. The wind velocity which had ranged around 10 miles per hour increased to 15, reaching a peak of 25. Just prior to the peak day there was another rain storm with 1.67 inches precipitation.

The effect of wind is also shown graphically on the last peak of the descending limb when the pollen count rose coincident with a wind velocity for that day of 31 miles per hour.

One additional factor controlling pollen distribution, namely, sunlight, does not show on these curves. Ragweed tends to pollinate more abundantly in the mornings than in the afternoons. A cloudy morning with a sunny afternoon releases less pollen than a sunny morning with a cloudy afternoon, wind velocity being the same.

That the 1931 curve represents a general disturbance throughout Virginia is indicated by our 1930 and 1931 curves in Richmond, Washington and Raleigh, drawn to the same scale. Comparable variations to those observed in Richmond were found at the northern edge of Virginia and to the south of the State.

The 1932 season, like that of 1930, followed a period of drought. The deficit in precipitation for July and August was 3 inches each, for September 2½ inches, and by the first of October, 1932, there was a deficit, for the year so far, of 7.4 inches of rainfall. As a consequence, the ragweed prevalence fell well below the predicted mean showing only four small peaks none of which was excessive. The wind velocity curve and the rainfall record show a remarkable parallelism between periods of storm and increased pollen prevalence.

While ragweeds are of chief importance, other pollens take their toll. Chart 3 shows the total curve for trees, grasses and weeds in 1931. In Richmond, tree pollination usually commences early in February. It will be seen that the tree curve is highest of all but, since this is a composite curve representing many varieties of trees, since one is sensitive only to one or a few of the trees, and since fewer

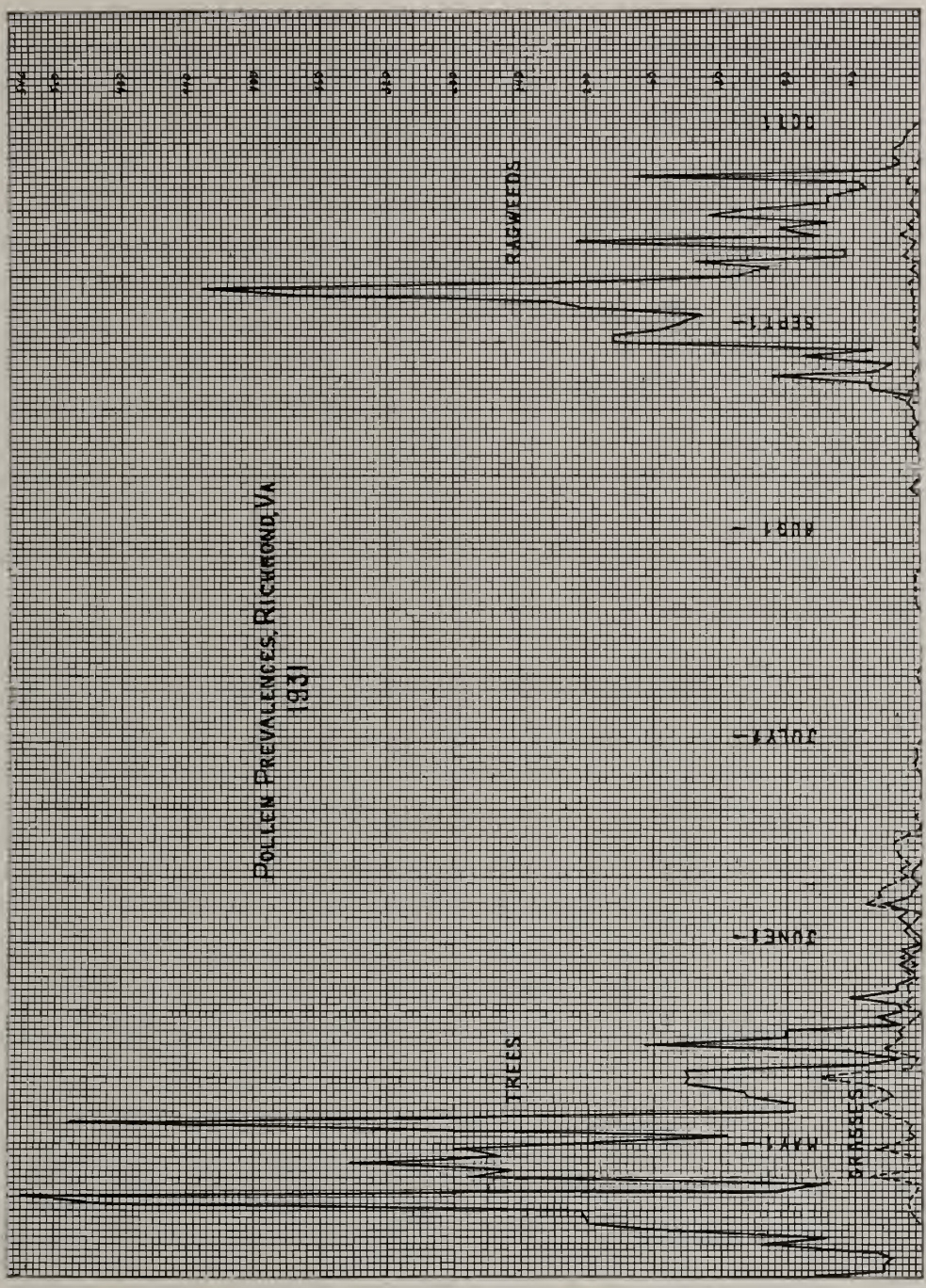


Chart 3.—Pollen prevalences in Richmond in 1931. The tree curve represents all varieties of tree pollens. The ragweed curve therefore represents the heaviest individual pollen prevalence for year

people are tree sensitive than ragweed sensitive, the ragweed curve is the one of greatest importance. However, in our experience a relatively large number of individuals are tree sensitive and do have early symptoms. The grass curve is low but not low enough, since it does cause symptoms in grass sensitive persons.

The accompanying table shows the period of pollination of the various hay fever-producing plants in and around Richmond in 1932. The field work on which this chart is based was done in collaboration with Miss Anna Clark, Botanist of The Collegiate School. The need for such regional surveys is indicated by the fact that the pollen calendar for a city as close

as Baltimore[7] does not correspond accurately with the calendar for Richmond.

Pollinating Periods of Trees, Weeds and Grasses in Richmond

1932

June Grass—January 15 to January 31
and May 1 to June 12.
Silver Maple—January 17 to March 3.
Winged Elm—January 26 to February 26.
Red Maple—February 5 to March 14.
Alders—February 7 to March 5.
Pines—February 7 to June 22.
Orchard Grass—February 23 to March 20
and March 29 to June 14.
White Elm—March 2 to March 20.
Pussy Willow—March 3 to March 26.
Sycamore—April 6 to May 1.
Sugar Maple—April 6 to May 1.
Norway Maple—April 6 to May 1.
Poplars—April 7 to May 1.
Hackberry—April 20 to May 9.
Willow—April 20 to May 10.
Oaks—April 20 to May 9.
Mulberry—April 20 to May 9.
Birch—April 20 to May 9.
Crack Willow—April 20 to May 9.
Hornbeam—April 20 to May 11.
Hickory—April 22 to May 16.
Ash—April 24 to May 18.
Apple—April 25 to May 19.
Pecan—April 27 to May 19.
Sweet Gum—April 27 to May 21.
Ailanthus—April 27 to May 25.
Mimosa—April 27 to May 26.
Sheep Sorrell—May 1 to September 3.
English Plantain—May 19 to August 4.
Timothy—May 20 to August 15.
Ragweeds—August 7 to October 15.
Chenopods—August 10 to September 28.

The 1931-32 winter was a very moderate one and the season was consequently advanced. Even June grass grew for a short time and reached the point of pollinating, in January. But the season was really inaugurated by the Maples in the third week of January. Winged Elm or Corky Elm started almost as soon. Maple, Elm and Alder complete most of their pollination in February although White Elm extends pretty well through March. Pine commences early in February but its pollen does not become dense on the slides until toward the middle of April. By the middle of May, Pine pollen becomes infrequent. The long period of Pine pollination is due to the fact that there are several varieties of Pine which pollinate at different times. This is also seen in the Sugar and Norway Maples which pollinate in April. Silver and Red Maple pollinate before putting out foliage while Sugar and Norway Maple pollinate after the appearance of leaves. The Oaks, Beeches, Birches, Hornbeam, Ash, Nuts and Gum trees pollinate late, commencing toward the end of April or the first of May. The trees mentioned are the more frequently allergenic trees.

In 1932 the Sorrels and Docks commenced pollination around the first of May, followed, the middle of May, by the Plantains and the grasses. The Sorrels and Docks terminate in June but the Plantains continue to pollinate throughout July.

It is surprising to realize that there is a period in midsummer from the end of June until nearly the middle of August during which there is very little pollen in the air. While there is no intermission between the tree and grass seasons there is a distinct interval between the grass season and the ragweed season.

Time does not permit further discussion of the individual tree and grass pollen curves at this time. Our observations will be continued and supplementary reports will be made from time to time.

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## ALLERGY IN CHILDREN.*

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The terms allergy, anaphylaxis, and hypersensitiveness were for a long while used more or less synonymously until Cooke, and more recently Bray, attempted to classify them. Hypersensitiveness is used to include all reactions in which a hypersusceptibility to some foreign agent is shown as compared with normals, and is subdivided into (1) Anaphylaxis, meaning induced manifestations of hypersensitiveness in laboratory animals, and (2) Allergy, as applied to (a) natural or spontaneous

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hypersensitivity in humans including asthma, hay fever, eczema, urticaria and migraine, and (b) to induced states as serum sickness and drug rash.

It is with natural or spontaneous allergy that we shall deal in this paper. The term allergy was first coined by Von Pirquet in 1906 to designate "an altered reactivity." Allergens are any absorbable substance with which the body comes in contact either by inhalation, ingestion or injection giving manifestations of hypersensitivness.

### Etiology

1. Predisposing: Among the predisposing causes we have first (a) Heredity.—Cooke shows in a series of 500 cases an hereditary factor in 48 per cent. The closer and more complete the inheritance, the earlier the age at which symptoms first appear. Thus where there is no factor of inheritance, the age of maximum symptoms is 20-25 years. Where paternal or maternal, 10-15 years. When both paternal and maternal the age is 5 years. Authorities, while all admitting an hereditary factor, differ in their opinions as to the transmission of definite clinical allergy. Cooke believes that the allergic capacity is transmitted but the allergic offspring is just as likely to show asthma from an eczematous parent as otherwise. Rowe claims a family history in 60 per cent of his patients, and believes that not only the allergic tendency is inherited, but also a tendency to specific types of sensitization, citing instances of parents subject to pollen transmitting such a sensitization to their children; also records of milk sensitization being transmitted through three generations. He concludes, however, that such specific inheritance is not the usual finding.

Bret Ratner claims the placenta is permeable and that proteins may pass from the mother to the fetal circulation, and thus sensitize the fetus in utero, explaining the allergic manifestations present when the baby is first introduced to the offending substance. He then cites cases to prove that pregnant women overindulging in particular foods create a sensitiveness to those foods in the infant and may possibly be the cause of a good many of our vagotonic or colicky problems in infancy.

The infant, too, may be sensitized through proteins in the mother's milk. This was questioned until Donolly, in 1929, showed that egg proteins were eliminated in breast milk.

2. Acquired: Allergy may be acquired at any time during life by overindulgence in a specific food, or by the intermittent taking of specific foods. Schloss has shown that undigested protein can be absorbed by the alimentary tract of children who have gastro-intestinal disturbances. This protein after absorption acts as a foreign substance in the blood and sensitizes the child to an unsplit protein. He explains the not unusual urticaria and eczema after nutritional disturbances in this way.

There is also a possible passive allergy transmitted from an allergic person to a non-allergic by blood transfusion, which should have some influence in the selection of a donor.

3. Exciting Causes: What we have just been talking of are the predisposing factors. The allergens are the real exciting cause of allergy. In approaching the causative factor it is essential to have a very open mind, for the most innocently thought of food or substance may have considerable bearing on the condition. Ratner had this in mind when he stressed the necessity of a most searching and detailed history. Every angle of an allergic symptom must be considered,—relation to food, reason, environment, time of day or night, also the food dislikes of the child and the antepartum diet of the mother. Many regard these food dislikes of a child as a protective factor in an effort to minimize allergic states. Then, too, it is important not to let one's enthusiasm run away with him. The mere fact that you have had a patient cleared of a complexity of symptoms quite miraculously by eliminating some substance of contact does not mean this substance is at fault in all your patients with similar symptoms.

### Diagnosis

In diagnosing the allergic state following a very detailed history, we have recourse to (1) skin tests, either by the scratch or intradermal method, the former being the more widely used because of its simplicity and lack of danger. The intra-dermal is reserved for those cases that do not respond to the scratch. The allergens for these tests may be obtained from commercial laboratories either in the form of dry powders, extracts or pastes.

Bray outlines the technique for these tests as follows:

1. Scratch Method: The outer side of the upper arm or anterior aspect of forearm are the sites generally used, but we may use the extensor aspect of thigh or the back. The

size of the wheal will vary with the location selected, near the bend of the elbow being more sensitive. The scratches, made with a scarifier, are about an inch apart and covered with 10/N sodium hydroxide and the antigen rubbed in with a sterile toothpick. No unusual systemic reaction is obtained by this method. One disadvantage is the fact that there exists a de-sensitive period following an attack of allergy, lasting from twenty-seven to forty-five days, according to Schloss, and during this period the tests will be negative. A positive reaction consists of a distinct wheal surrounded by a zone of erythema in the presence of a negative control. The wheal is usually 5 m.m. in diameter.

Multiple sensitivity is not rare, and quite often reactions will be obtained to quite a number of substances, adding to the complexity of the case. It is possible that some of these substances are not concerned in causing the symptoms; so here again recourse to the minutest detail of the history is necessary.

2. Intradermal Method: This is more sensitive, but more apt to be misleading through multiple sensitivity and false reactions. It is more painful and much more dangerous. Fatalities have been reported following this method. About 1/50 c.c. of the solution is injected intra-dermally, care being taken not to go through the skin. I might add that this is quite a tedious and at times impossible procedure in a squirming child. Adrenalin solution, ready for injection, should be at hand when doing these tests, in case of any alarming reaction.

3. Praunitz—Kustner Reaction: This was called a reaction by proxy (Freeman). In this method a passive sensitivity is created in localized areas by injecting the serum of the sensitive patient in selected skin areas of a non-sensitive person. This was first done in 1921. It is of value where skin tests are impracticable, as in a severe eczema, infants, and extremely nervous patients. The technique as given by Rowe is that 5 c.c. of blood are withdrawn from the patient, defibrinated, centrifuged, and the serum passed through a Berkfeldt filter. This serum, tightly stoppered and stored in icebox, will keep for six months. Into the skin of a normal non-sensitive person 1/20 to 1/10 c.c. of this serum is injected at different locations. After two to three hours each site is tested with the suspected protein.

4. Patch Test: This is more sensitive in patients whose symptoms result from external irritants, especially skin conditions. In center of a 4 c.m. piece of adhesive place 3 c.m. square of lint to prevent adhesive tape dermatitis. On this place 1 c.m. gauze which is covered with substance to be tested. Routinely patches are applied to upper portion of chest and allowed to remain twenty-four hours.

5. The ophthalmic reaction is largely used to determine pollen sensitiveness. A solution of suspected allergen is dropped in the conjunctival sac. A positive reaction varies from tickling to a bloodshot eye, and sneezing. Tests similar to this have been applied to the nostrils, on the lips, and by instillation in the rectum.

Then, too, we have recourse in our diagnosis to the so-called Elimination Diets, which have been used extensively and more recently strongly advocated and standardized by Rowe. He recognized the fact that allergic reactions due to food frequently do not give positive skin reactions. Rowe uses four diets, starting with milk alone and using different types of cereal, bread, meat, vegetables; fruits as additions. These diets exclude the substances to which most patients are susceptible such as wheat, milk, egg, apple, banana, orange, celery, cabbage, cauliflower, potato, chocolate, fish and nuts. This is essentially a method of diet trial, omitting first one food and another, and noting the effect on the symptoms. This is especially valuable in infants whose diet is limited and can more easily be supervised.

### Symptoms

The clinical symptoms appearing in the allergic state vary with the body cells that happen to be sensitive. Thus, when of the bronchi we get asthma; of the skin, an urticaria; of the mucous membrane, an allergic rhinitis, or hay fever. This accounts for the wide variety of allergic responses seen in sensitive individuals. Almost every disease, at one time or another, has had allergy given as its cause. Epilepsy, arthritis, erythema multiforme, pyloric stenosis, colic, cyclic vomiting, and many others have been placed in this category by different writers. Even in the purely infectious ones, as scarlet fever and tuberculosis, claims have been made that the symptoms are due to a bacterial sensitization. These, however, have not been substantiated; the accepted conditions today as being allergic are asthma, hay fever, urticaria, angioneurotic edema, eczema, and more recently migraine—(Rowe, Bray, Balyeat, Schloss, Cooke, Vaughan, Duke).

Asthma: Not all asthma is allergic. Peshkin in 100 cases found 79 protein sensitive. Cooke, in 250 cases, reported 85.6 per cent. Balyeat estimates 1.5 per cent of the population suffers some time in life from asthma, and 50 per cent of these suffer before twelve years of age. Asthma in children is not always easy to diagnose. It is quite often confused with bronchial pneumonia, and at times can only be recognized by the wheezing which identifies it. The clinical picture is that of a bronchitis of the smaller tubes coming on with great suddenness. There is dyspnoea, some sneezing, and frequently a rise in temperature; on auscultation, expiration is prolonged and accompanied by many sibilant rales. The prompt relief by injection of adrenalin cinches the diagnosis. The relation between asthma and eczema has long been recognized, for Peshkin reported in 100 asthmatics that 22 per cent previously had eczema. Cranston Low draws the conclusion in asthma that the younger the patient the more frequently food proteins are responsible, while later in life animal emanations, dust, and bacterial antigens from focal infection. Bray notes that asthmatic children are particularly free from other ill health, and Balyeat that 80 per cent are above the average in mentality.

Hay fever is not unusual in the child, though frequently unrecognized. It is characterized by profuse watery *nasal discharge*, *nasal obstruction* due to engorgement and edema of the nasal muocus membrane, *discomfort* or *itching* of the nose and *sneezing*, especially in the morning and evening—(Sweet). Hay fever is usually attributed to pollen allergy, being seasonal when due to one group of pollen, and perennial when a multiple sensitivity exists. A child born with the ability to become sensitive to pollen usually becomes sensitive to other substances, such as animal dander, dusts and foods, and thus will frequently develop other allergic symptoms such as asthma. Balyeat places much emphasis on itching of the nose and states when present one should always be suspicious of allergic origin.

Eczema: While not solely due to sensitization, allergy is now considered causative in the majority of cases of eczema. Many are due to specific sensitization to foods such as milk, wheat, eggs, and to substances with which the child comes in contact, as wool and silk. It is not uncommon to find an eczema due to a change in the material of which the undergarments are made, or to a change from mother's to cow's milk. Frequently we see eczema in the baby clear up when chocolate or egg is omitted from the mother's diet.

### Treatment

Treatment of all allergic conditions is much the same, excepting of course the symptomatic phase of the particular allergic response. These treatments consist in—

1. Elimination of the causative allergen either by avoidance or removal. This is the ideal method, theoretically, where the allergen has been found by the history, skin tests or elimination diet. However, where the food is one of the essential ones where a multiple sensitization exists, it proves a most puzzling problem. In the allergies due to cow's milk, Kerley has advocated prolonged boiling of the milk. Dry milk and evaporated milk have also been used with some degree of success. Recently Hill has advocated and had marketed a soy bean preparation, called Sobee, to replace milk. Also a non-allergic milk has been put on the market by the S. M. A. Co. In children Bray claims complete removal of the allergen will result in a loss of sensitivity in two years, and many will be de-sensitized even without removal of the substance.

2. Desensitization: The value of this method lies in those cases in which specific causes cannot be avoided or removed. It may be attempted either by ingesting gradually increasing doses of the allergen, if a food, or by subcutaneous injection either of food, dust or animal emanation. This is done by having various strengths of solutions in multiples of 10, going to the weakest of 1 to 100,000. The skin is tested with 1/20 c.c. intradermally of the weakest solution, and on up until a reaction is obtained. Then .1 c.c. of this is given subcutaneously and every two hours increased by .1 c.c. until the dose is .8 c.c. Next morning the same procedure is carried out with the next stronger solution, until the strongest is used. At times, if much reaction is obtained, the same dose has to be repeated, or even cut down. This is what Bray describes as the Rush treatment. In the more usual method this same procedure is carried out with weekly or bi-weekly injections.

Non-specific proteins, such as peptone, milk, tuberculin, have been used by injection, but reports have been so variable that they have not become a popular method of treatment.

Symptomatic treatment of allergic condi-

tions may be dismissed with the realization that adrenalin is still the mainstay in asthma, with ephedrine preparations of value in pollen allergies, as hay fever. In the use of local treatments in eczema it is well to keep in mind the nature of the allergen. Thus, if due to a vegetable substance, it is more wise to use a mineral oil for cleansing rather than olive oil. If of animal origin, as wool, it is better to avoid the animal bases used in preparation of ointments.

In closing, I want to say that I have presented this subject through a review of available literature, in an effort to correlate the essential factors in a subject that daily is attaining more prominence.

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## THE NATURE OF THE CIRCULATORY DISTURBANCES IN HYPERTHYROIDISM (THYROTOXICOSIS).

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Everyone is now familiar with the cardiovascular symptoms of hyperthyroidism, which are essentially the same in both exophthalmic goiter and toxic adenoma. These are both subjective and objective. The former include palpitation, dyspnea on exertion, flushing, throbbing in the neck, precordial distress; the latter include persistent tachycardia, arrhythmia and especially auricular fibrillation, diffuse and forceful apex impulse, increase in cardiac dulness, loud heart sounds, systolic precordial murmurs, increase in pulse pressure and capillary pulsation. These symptoms are often the most outstanding and are frequently the main complaints of the patient. Often the diagnosis of heart disease is made and the true cause of the disturbance overlooked. These symptoms, however, do not mean heart disease. It is only when signs of congestive failure develop that one may say that the patient has heart disease due to hyperthyroidism.

### The Incidence of Congestive Heart Failure

Interestingly enough, congestive heart failure never occurs in young individuals with hyperthyroidism unless they have some independent cardiac lesion. It is only in older persons, and usually those with a long history of low-grade chronic exophthalmic goiter or more frequently of toxic adenoma of long duration, who have congestive failure which can be ascribed as due largely to the hyperthyroidism. Willius and Boothby (1923) were apparently the first to emphasize the relative infrequency of congestive heart failure in patients with goiter. Not more than 2 per cent of 377 patients with exophthalmic goiter and adenomatous goiter with secondary hyperthyroidism had sufficient clinical evidences of myocardial injury to allow them to be classified as having serious cardiac disease. These authors were of the opinion that death of patients in postoperative hyperthyroid crisis, especially before the days of preoperative administration of iodine, was due to an intense general intoxication in which the heart was involved, but they did not feel that cardiac weakness was the main cause of death. They emphasized, however, the importance of cardiac damage as a factor in prognosis and treatment and stated that in the limited group of patients with evidence of severe myocardial weakness operative mortality can be greatly reduced by measures directed to the restoration and maintenance of cardiac compensation.

Hamilton found fifty of 900 cases of chronic heart failure to be due to hyperthyroidism, thirty-four with exophthalmic goiter and sixteen with toxic adenoma. Of these, forty-two were women with an average age of 50 years. This high incidence probably indicates accuracy of diagnosis and also the effect of hyperthyroidism and age together upon the function of the heart. Cabot's study of 1906 cases of heart disease which came to necropsy indicates, however, the relative rarity of hyperthyroidism as a cause of heart failure. He found only three cases of exophthalmic goiter with con-

gestive failure. There were four cases of congestive failure which in retrospect he concluded were instances of heart disease due to adenomatous goiter with hyperthyroidism. He decided that congestive heart failure is rarely the cause of death in hyperthyroidism, and that death is usually due to toxic, infectious or mechanical factors.

Hurxthal, in a study of 500 cases of hyperthyroidism, came to the conclusion that the average age of patients with congestive heart failure was over forty and that a large percentage of them showed evidence of previous cardiovascular disease. His opinion was that the most significant causes of congestive heart failure in hyperthyroidism are age and its associated cardiovascular changes, the specific heart drive, auricular fibrillation, and the duration and intensity of thyroid overactivity.

Other authors (Andrus, Lahey, Mora and Greene) have noted the relative infrequency of congestive heart failure due solely to hyperthyroidism and its occurrence only in older patients. The conclusion seems justified, therefore, that congestive heart failure, while it may result from hyperthyroidism, is not a common complication.

Before considering the nature of the circulatory disturbances in hyperthyroidism I feel justified in pausing briefly to refer to certain clinical phases of cardiac failure due to hyperthyroidism which have been emphasized lately. The first has to do with the diagnosis of goiter when congestive heart failure is present. Unless one has seen a number of these cases and is alert to their occurrence he is apt to overlook the etiology of the cardiac condition, and this is a serious blunder, since the recovery of the patient is dependent upon its recognition. The diagnosis is made still more difficult by the occasional occurrence of atypical cases which have been designated "masked hyperthyroidism." In this country Levine and Sturgis, Priest, Tucker, and Hamburger and Lev have written on this subject. The patients in this group are middle-aged and many of the usual outstanding signs and symptoms of hyperthyroidism are missing, namely, palpable enlargement of the thyroid gland, exophthalmos, nervousness and excitability and even at times tachycardia. The symptoms other than cardiac which are usually present are loss of weight, fatigability, a staring expression of the eyes, and sometimes pigmentation of the skin. There is usually no etiological factor at hand to explain the congestive failure, so that one's suspicion should be aroused by the occurrence of the above mentioned suggestive symptoms. Permanent or transient auricular fibrillation, loud heart sounds and failure of digitalis to slow the heart rate are other symptoms directing the physician's thoughts in the right direction. Two or more determinations of the basal metabolic rate may definitely settle the point, but according to Morris these cases are sometimes so atypical that even the metabolic rate may be normal. The patients whose cases he reports were restored practically to normal by thyroidectomy. One might discuss this situation at length because of the paradox involved, but time will not permit. In this connection it may be mentioned that Coller found the cardiovascular signs of hyperthyroidism in a fairly large number of 300 patients over 20 years of age with "endemic goiter" but without other toxic symptoms and with a normal basal metabolic rate. The frequency of these cases increased with advanced years. Coller thought that these were probably instances of adenomata in colloid goiter which had been intermittently hyperactive for a long period of time.

### Pathologic Changes in the Heart

The size of the heart has been the subject of a great deal of attention. Wilson (1923) noted some degree of hypertrophy of the heart in sixteen of twenty-one cases. Two of the hearts weighed 500 and 550 grams, respectively, but the others were enlarged only 5 to 10 per cent. Cabot commented upon the apparent enlargement of the hearts during life but their actual lack of hypertrophy when examined post mortem. In a study of the pathologic changes in auricular fibrillation I noted that in thirty-six cases of exophthalmic goiter and twenty-seven cases of adenomatous goiter associated with hyperthyroidism the hearts were only mildly or moderately hypertrophied. Hurxthal, Menard and Gogan compared the size of the hearts of 100 consecutive cases of toxic and 100 consecutive cases of non-toxic goiter by teleroentgenograms and concluded that if hyperthyroidism causes cardiac enlargement or hypertrophy and dilatation it is slight. Cardiac enlargement as determined by this method showed a fairly direct relationship to age and coincident cardio-vascular disease. No definite relationship was found between the

duration of the disease or amount of weight lost and the size of the heart. Because accurate data concerning the effect of hyperthyroidism on the size of the heart were not available in the literature Simonds and Brandes studied this question experimentally. They found that an actual hypertrophy of the heart resulted from feeding 10 grams of desiccated thyroid gland daily to healthy dogs. This hypertrophy involved all of the chambers of the heart with a slightly greater proportional increase in the left ventricle, but when the loss of body weight exceeded 35 per cent the weight the heart had gained in hypertrophy was lost. Hashimoto and other experimenters have found similarly enlargements of the hearts of animals made hyperthyroid. These studies all tend to show that hypertrophy does occur in hyperthyroidism but that it is not constant and is usually mild. This fact is interesting in comparison with what happens as a result of hypertension. In both hyperthyroidism and hypertension the work of the heart is greatly increased, but hypertrophy is constant and usually considerable in hypertension, and the heart fails relatively often. Forcing blood through an increased peripheral resistance as in hypertension seems to be a greater strain upon the heart than a probably similar degree of increase in amount of work done when the peripheral vessels are wide open as in hyperthyroidism.

Pathologic studies of the heart in hyperthyroidism have all led to the conclusion that there is no specific morphologic change, either grossly or microscopically. Wilson found the hearts of patients with exophthalmic goiter to be pale, soft and somewhat dilated. Histologically there were apparently more advanced fat changes than are present in the myocardium of individuals of the same age without hyperthyroidism. I found practically no changes of any consequence in the myocardium, sinoauricular node or conduction system in the hearts of 6 patients who died with exophthalmic goiter and 2 who died with toxic adenoma. All of these patients had auricular fibrillation, but only 2 died of congestive heart failure. Other men have examined the hearts of patients with hyperthyroidism but have not found distinctive lesions. Occasionally focal necrosis of the myocardium has been observed. Lymphocytic infiltration has also been found at times. Owing to the infrequency of such lesions, however, it may be assumed that these are the result of other factors than simple hyperthyroidism. Several investigations have been carried on in animals made hyperthyroid artificially. Notable among these were those of Goodpasture and of Hashimoto. The former found mild changes in the heart consisting of perivascular fibrosis with some destruction of muscle about small arteries. These lesions apparently occurred soon after the first dose of thyroid substance, since they were healed at the death of the animal. Animals made hyperthyroid were given chloroform by inhalation, and in these there was widespread myocardial necrosis. Goodpasture concluded that hearts overstimulated by an increase in thyroxine are more susceptible to injury by toxic substances, such as may result from a relatively mild terminal infection, which under other circumstances may not injure the myocardium. Hashimoto produced lesions in the heart with toxic doses of thyroid substance consisting of swelling of the muscle fibers, scattered areas of round-cell infiltration and lesions suggestive of Aschoff nodules. These were all more severe the greater the amount of thyroid substance administered.

### Circulatory Alterations

Physiological investigation on the circulation in hyperthyroidism has been productive of enlightening information. The factors which have been studied are the vital capacity of the lungs, the minute volume output of the heart, the velocity of blood-flow, the pulse rate, the blood pressure and the blood volume.

Rabinowitch studied the vital capacity of the lungs in patients with hyperthyroidism and observed a progressive decrease as the basal metabolic rate increased. In a similar study McKinlay found that there was a reduction of vital capacity of the lungs to below 70 per cent of normal in a great majority of severely toxic patients. Lemon and Moersch found also that the vital capacity of the lungs decreased as the metabolic rate increased, but in the 85 subjects examined there was no exact relationship between the two factors. Blumgart, Gargill and Gilligan found a diminution in the vital capacity to be an inconstant finding, but with a decrease in the basal metabolic rate after treatments there was a tendency for the capacity to increase.

The minute volume output of the heart in

hyperthyroidism has been studied by competent workers using different methods. The results of the various workers have agreed, with one exception (Rabinowitch and Bazin). Plesch found the minute volume output of the heart in one patient with exophthalmic goiter to be 5.288 c.c. as compared with 4.359 c.c. in one normal subject tested with the same crude, original gasometric method. The oxygen consumption in the patient was almost twice that of the normal subject. Liljestrand and Stenström used the nitrous oxide method of Krogh and Lindhard to study the minute volume output of 10 normal subjects and 11 patients with exophthalmic goiter. The average increase in the output was 80 per cent in 8 female patients whose average basal metabolic rate was 58 per cent above normal, and 100 per cent in 3 male patients whose average B. M. R. was 66 per cent above normal. Davies, Meakins and Sands found a fairly close correlation between the oxygen consumption (B. M. R.) and the output of the heart in patients with hyperthyroidism before and after operation. Kininmonth's results with the ethyl iodide method of Henderson were similar in patients with exophthalmic goiter. Several workers (Robinson, Liljestrand and Stenström and Burwell, Smith and Neighbors) noted that the minute volume output of the heart increased relatively more than the oxygen consumption, so that the oxygen needs of the tissues were supplied without diminishing the oxygen tension of the mixed venous blood. Plummer and Boothby showed that for a given amount of work by patients with hyperthyroidism there is a disproportional rise in the metabolic rate which requires a similar disproportional rise in ventilation and in blood-flow. Odaira fed rabbits thyroid gland and found an increase of 241 to 270 per cent in the cardiac output, with increases in oxygen consumption of 44 to 144 per cent; after thyroidectomy in rabbits he found a diminution in the cardiac output of 20 to 59 per cent, with decrease in oxygen consumption of 10 to 52 per cent. Blalock and Harrison used dogs to determine the effect of thyroidectomy and of thyroid feeding on the cardiac output. Samples of arterial and venous blood were drawn directly from the ventricles and the oxygen consumption determined, so that by means of the Fick formula an accurate figure could be obtained of the number of cubic centimeters of blood passing through the lungs each minute. In general the decrease in the cardiac output following thyroidectomy was proportionately greater than the decrease in oxygen consumption. In the dogs fed thyroid substance the cardiac output increased as the oxygen consumption increased, but the rate of increase in cardiac output was at first less than that of the oxygen consumption, although later the output increased rapidly and showed a greater relative elevation than the metabolic rate. This fact led these workers to conclude that thyroid substance has a specific effect on the myocardium. Fullerton and Harrop found the increase in cardiac output to correspond to the degree of elevation of the basal metabolic rate.

The velocity of the blood-flow in patients with hyperthyroidism before and after treatment was studied by Blumgart, Gargill and Gilligan by means of the radium active deposit method. The velocity of blood-flow through the lungs was strikingly increased and was proportional to the degree of elevation of the basal metabolic rate. Four of the 13 patients showed signs of mild cardiac insufficiency. In these the velocity was slightly lower than in those without evidence of heart failure. In the latter the velocity of blood-flow through the lungs averaged 83 per cent above the normal, while the basal metabolic rate averaged 33 per cent above the normal. When the B. M. R. was lowered by the administration of Lugol's solution or by operation the velocity of blood-flow was correspondingly slowed. These same investigators studied the velocity of blood-flow in 7 patients with myxedema and found it to be strikingly slow, the degree of decrease corresponding closely with the degree of reduction of the basal metabolic rate. After administering thyroid extract by mouth they found a progressive increase to normal in the velocity of blood-flow which closely paralleled the rise in the metabolic rate. A comparison with the increased velocity of blood-flow in hyperthyroidism led them to believe that the increased velocity of blood-flow in that condition is due to the increased basal metabolic rate rather than to a specific toxic effect upon the heart. In their work, however, they did not differentiate between exophthalmic goiter and adenomatous goiter with hyperthyroidism, so that the theory of Plummer that in exophthalmic goiter there is a toxic form of thyroxine elaborated was not tested. If the theory

is correct one might expect to find theoretically that the increase in velocity of blood-flow in exophthalmic goiter is not as great in proportion to the elevation in the basal metabolic rate as in toxic adenoma because of the toxic effect of the abnormal thyroxine upon the functional capacity of the heart.

The tachycardia in hyperthyroidism has received considerable attention. It is one of the constant signs of the disease and is present when the patient is at rest and during sleep, although there may be considerable variation from day to day. Digitalis has relatively little effect upon the pulse rate. Willius and Boothby observed an average slowing in the pulse rate of 4 beats each minute in patients with exophthalmic goiter and of 15 beats each minute in patients with adenomatous goiter and hyperthyroidism. The slowing of the rate was associated with a fairly proportional increase in pulse pressure. The effect of digitalis on heart rate was more marked in patients exhibiting auricular fibrillation than in those with regular rhythm. H. S. Plummer has called attention to the aggravating action of digitalis on the symptoms of hyperthyroidism and was probably the first to limit its use to cases of congestive heart failure. Opposed to this view is that of Blalock and Harrison who feel that the administration of digitalis is indicated in hyperthyroidism on the basis of experimental work on dogs, in which they found the output of the heart in experimental hyperthyroidism to be decreased by digitalis. Bram observed the effect of practically all of the popular drugs used to influence cardiac action and came to the conclusion that, as far as the tachycardia was concerned, they were without tangible effect. On the theory that the direct or immediate cause of the excessive cardiac activity is an overactivity of the cardiac accelerator nerves, in other words sympathecotonia, he used physostigmine salicylate because of its stimulating effect on the autonomic nervous system. In a series of 200 cases of exophthalmic goiter the force and rate of the heart's action was reduced in approximately 73 per cent of the cases, with improvement in the subjective and objective symptoms. There was improvement in the basal metabolic rate, the exophthalmos, and other symptoms of the disease. He was led to believe that "theoretically, it would appear that a reduction of heart rate and force would reduce the vascularity and size of the thyroid gland and consequently the excitability of this organ."

Sturgis and Tompkins, Minot and Means, and Blumgart, Gargill and Gilligan have emphasized the general correlation between the pulse rate and the basal metabolic rate. The variations of individual measurements, however, are considerable and "are probably due to the fact that in order to increase the volume output of the heart to meet increased metabolic demands both the stroke volume and the number of beats per minute are increased but in varying proportion in different patients, just as in normal persons" (Blumgart *et al*).

So important have the tachycardia and the increased pulse pressure in hyperthyroidism been considered as indicating the degree of increase in basal metabolic rate that Read has constructed a formula for the prediction of the B. M. R. based upon these factors. He stated that by this formula[1] it was possible to predict the B. M. R. within 10 per cent in a little more than half of the cases. Jenkins has constructed similar formulas[2] which he considers more accurate and has made tables to simplify the use of the two factors. He concludes that this measure should be of value as a procedure supplementary and confirmatory to basal metabolism determination in the diagnosis of metabolic disease.

The cause of the tachycardia has until recently been thought to be a stimulation of the sympathetic nerves, an increased production of adrenalin or toxic influences on the myocardium. Within a short period of time several groups of investigators have independently proved that these theories are wrong. J. K. Lewis and McEachern published the results of experiments with rabbits' hearts which showed that the isolated hearts of thyroxinized animals persist beating at an accelerated rate. Priestley, Markowitz and Mann also found that the hearts of thyroxinized rabbits when perfused beat faster then normals.[3] In an ingenious experiment they demonstrated that the heart of a pup which had been anastomosed to the vessels of the neck of a large dog beat much faster when the large dog was thyroxinized. In a large series of rabbits made acutely hyperthyroid by intravenous injection of thyroxine

1. 0.75 (pulse rate plus 0.74 pulse pressure) minus 72 equals basal metabolic rate.
2. For men: 0.534 pulse rate plus 0.436 pulse pressure minus 59.94. For women: 0.497 pulse rate plus 0.368 pulse pressure minus 57.42.
3. The few exceptions were probably due to the fact that the latent period of action of thyroxine had not been recognized.

I found uniformly that the isolated perfused hearts beat much faster for many hours than the hearts of rabbits not thyroxinized. The average rate of the perfused hearts of normal rabbits was 140 per minute and that of the acutely thyroxinized rabbits was 193 per minute, an increase of 38 per cent. The effect of one injection of thyroxine became manifest by the increased heart rate after a latent period of 2 days and persisted for 2 weeks. I noted in these experiments that the hearts of the thyroxinized rabbits were more subject to attacks of arrhythmia and seemed to beat more vigorously than normal. After excision of the sino-auricular node of the perfused hearts of thyroxinized rabbits the heart rate was still greatly increased when compared with controls, and after auriculo-ventricular dissociation was produced by crushing the bundle of His the ventricles usually continued to beat at an accelerated rate. McIntyre has laboriously completely denervated the hearts of dogs and has found that when the animals were made hyperthyroid the heart beat faster to the same degree as control dogs. These experiments all showed that thyroxine exerts its effect either upon the muscle fibers or upon the nerve endings in the myocardium. It remained for Cecile Markowitz to show conclusively that thyroxine acts directly upon the muscle fibers. A study was made of the action of thyroxine on tissue cultures of pulsating fragments of heart muscle removed from chick embryos before the appearance of nerve elements in the heart. A progressively greater increase in rate of pulsation occurred, ending in some cases in fibrillation and paralysis.

The high incidence of auricular fibrillation in hyperthyroidism with or without congestive heart failure has been frequently commented upon. Willius and Boothby found about the same frequency in exophthalmic goiter (22 per cent) and in adenomatous goiter with hyperthyroidism (24 per cent). The arrhythmia was constant in 8 and 10 per cent respectively, intermittent in 5 and 4 per cent respectively, and transient in 9 and 10 per cent respectively. The development of auricular fibrillation did not depend so much on the intensity of the hyperthyroidism as on the duration of the increased metabolic rate in both conditions. In many instances it developed under the stress of operative procedures. In my series of 145 cases of auricular fibrillation in which the hearts were studied post mortem there were 36 cases of exophthalmic goiter and 27 cases of adenomatous goiter with hyperthyroidism. This study was made in a large clinic in which cases of hyperthyroidism are concentrated. In the 575 cases of auricular fibrillation reviewed by McEachern and Baker, 7.5 per cent were due to hyperthyroidism. Stroud, LaPlace and Reisinger found 9 instances of auricular fibrillation in their series of 253 cases of arrhythmia. There were, however, only 8 cases of hyperthyroidism out of 781 cases of heart disease in the wards of the Pennsylvania Hospital in three years, and of these 6 had auricular fibrillation. This fact illustrates not only the frequency of the arrhythmia in heart disease due to hyperthyroidism but the low incidence of hyperthyroidism as a cause of heart failure (1 per cent in this series). The fundamental cause of auricular fibrillation has never been determined, but the fact that it is so common in hyperthyroidism and that it usually promptly disappears after the alleviation of the condition indicates that it is due to a disturbance of metabolism in the auricles. The fact that auricular fibrillation is so much more common than ventricular fibrillation may be due to the absence of a definite conduction system in the auricles. In my study of the pathologic changes in auricular fibrillation I showed that there was no specific histopathologic lesion; in fact, lesions of any kind were just as common in hearts which had not fibrillated. Other arrhythmias of little significance occurring in hyperthyroidism are premature contractions, sinus arrhythmia, paroxysmal tachycardia, auricular flutter, nodal tachycardia and sino-auricular block. Electrocardiographic changes in hyperthyroidism are not specific, although high T-waves have been said to occur rather frequently (Hoffman, Krumbhaar, Hamburger *et al*).

The increase in the pulse pressure in hyperthyroidism is just as constant as the tachycardia. A relationship between pulse rate and pulse pressure in exophthalmic goiter was noted by Harris, who concluded that the association of the two does not occur in any other condition. Willius and Boothby showed that the increase in pulse pressure in exophthalmic goiter is effected by a moderate increase in the systolic pressure with a normal or slightly lowered diastolic pressure, and that in contrast, the systolic pressure in adenoma-

tous goiter with hyperthyroidism is higher, with a correspondingly greater diastolic pressure. There was an average systolic pressure of 147 and an average diastolic pressure of 73 in the patients with exophthalmic goiter, and an average systolic pressure of 153 and an average diastolic pressure of 83 in the patients with toxic adenoma. They concluded from the fact that in adenomatous goiter with hyperthyroidism there is frequently an increased diastolic pressure (often over 100) that this disease is often associated with hypertension. In this connection Thompson, Dickie, Morris and Hilkevitch are of the same opinion. They found the incidence of hypertension to be greater in patients with toxic goiter after the metabolism had been restored to normal than in the general population, and they stated that if the systolic pressure is over 190 or the diastolic pressure over 100 before treatment it is practically certain that hypertension exists independently. Hurxthal analyzed 458 cases of toxic goiter but excluded from these cases of recurrent persistent hyperthyroidism and post-operative myxedema. With these he compared 250 cases of non-toxic goiter. Some of his conclusions are as follows: (1) the blood pressure readings taken under basal conditions are lower than those otherwise taken, especially in patients with hyperthyroidism; (2) the pulse pressure is increased in hyperthyroidism and decreased in about 50 per cent of patients cured; (3) there is no constant relationship between the height of the systolic blood pressure and the basal metabolic rate; (4) the average height of the blood pressure increases with advancing age; (5) the blood pressure in hypertension complicated by hyperthyroidism undergoes, on an average, the same change that patients with hyperthyroidism without hypertension undergo following operation; (6) there is no evidence that hyperthyroidism itself leads to permanent hypertension. Davies and Eason, Willius and Haines, and Blumgart, Gargill and Gilligan have noted that there is a relationship between the pulse pressure and the basal metabolic rate, namely, that when the latter is low the pulse pressure is low, and when it is high the pulse pressure is high. The increase in the pulse pressure in hyperthyroidism is evidence of the increase in blood-flow through the tissues. The peripheral vessels are wide open, and this fact, associated with the increased velocity of the circulation, accounts for the visible throbbing of the vessels generally and for the frequently observed capillary pulsation. The soft and sometimes dicrotic pulse is likewise explained. The paroxysmal flushing of the skin is probably due to a sudden increase in the intensity of these factors. A "pistol-shot" sound may be heard over the brachial and femoral arteries when the pulse pressure is great. The venous blood pressure has been measured in hyperthyroidism and has not been found abnormal in the absence of congestive heart failure either before or after treatment (Blumgart, Gargill and Gilligan).

A brief discussion of the cardiac murmurs in hyperthyroidism is all that is necessary. These are common. Willius and Boothby found cardiac murmurs in nearly half of their series and most writers have commented upon their frequency. They are systolic in time and blowing in character. Often there is one which is heard best in a localized area in the third left intercostal space, probably due to the changes in blood-flow in the aorta and pulmonary artery. Another is frequently present in the apical region and may or may not have a wide range of transmission. This one may be due to a functional mitral insufficiency. Both of these murmurs disappear after appropriate treatment. There is often a systolic bruit over the superior thyroid arteries, frequently associated with a thrill.

Some experimental work has been done to compare the survival period of isolated perfused hearts of thyroxinized rabbits with that of hearts of non-thyroxinized rabbits. The hearts of a series of acutely thyroxinized rabbits were so studied (Yater). These hearts continued to beat on the average just as long and possibly better than normal hearts. This fact supports the thesis that hyperthyroidism itself does not often seriously damage the heart.

Studies on the blood volume are of interest and probably have a bearing upon the adjustment of the circulation in hyperthyroidism. Wislicki determined the blood volume by the dye method, using trypan-red, in a large number of patients with exophthalmic goiter and found an average increase of about 30 per cent, which after proper treatment was promptly lost. Chang has found a similar increase in patients with a carbon monoxide method; those treated surgically showed a definite reduction

of the blood volume after operation. The use of Lugol's solution was found by both workers to have an effect in the same direction. Several workers (Thompson, Blumgart *et al*, and Wislicki) found a reduction of blood volume in myxedema with restoration to normal after the basal metabolic rate had been elevated by the use of thyroid extract or thyroxine. The explanation of the increase in the circulating blood volume in hyperthyroidism, which affects the plasma and erythrocytes proportionately, is probably two-fold—(1) contraction of the spleen as in exercise, and (2) the effect of thyroxine upon the equilibrium of body fluids. An additional factor may be the dilatation of the peripheral vascular bed, which seems to be associated with the increase in the blood volume in arteriovenous fistula.

### The Mechanism Underlying the Circulatory Changes

Hyperthyroidism is a condition in which there is an acceleration of the rate of metabolism beyond that which the organism needs or which man is accustomed to. This is probably brought about by an increase of thyroxine in all of the cells of the body. Normally whenever the tissues need more oxygen the cardiac output is increased. A brief discussion of the way this demand leads to an increased cardiac output is essential to an understanding of the thesis about to be advanced for hyperthyroidism. The normal heart ejects only the amount of blood brought to it; in other words, the amount of blood expelled from the ventricles at each beat is determined by the degree to which they are filled at the beginning of systole (Starling's "law of the heart"). In exercise a greater cardiac output is effected largely by an acceleration of heart-rate especially in the untrained subject, by the propulsion of blood through veins by the kneading action of muscular movements, and by the hastening of blood back to the heart by deeper and more rapid respirations. The heart accelerates in exercise mainly because of Bainbridge's reflex, i. e., when the right auricle is distended by an increased amount of blood the vagi are reflexly inhibited and the accelerator nerves stimulated. If the flow of blood into the heart during diastole is adequate the ventricles become almost fully distended early in diastole and very little additional blood subsequently enters them; consequently, an increase in rate, merely by shortening diastole in diastasis causes very little diminution of the output per beat, but allows a considerable increase in the minute volume output. This rule holds, of course, only up to a certain rate, say 150 per minute, when the output begins to diminish. In fever the heart is accelerated mainly by warming of the sino-auricular node, the pace-maker of the heart. In hyperthyroidism a different mechanism exists. Tachycardia is produced by the excessive thyroxine in the myocardium. General vascular relaxation allows the more rapid return of blood to the heart. Increased rate and depth of respiration (Hofbauer) aids in diastolic filling. The increase in total circulating blood volume is a contributory factor in maintaining the venous inflow, so that the heart becomes adequately filled in the presence of the tachycardia. That the heart beats more vigorously than normal is indicated by the elevated systolic blood pressure. Thus may be explained the increased cardiac output and velocity of blood-flow as purely fortuitous. Great cardiac hypertrophy is not necessary because there is no obstruction to the flow of blood. The heart is doing more work in hyperthyroidism but it is getting a sufficiency of oxygen for its own needs, so that the restorative processes in the myocardium keep pace with the catabolic processes as long as there is not a serious degree of general malnutrition. Provided, therefore, that the heart is healthy to begin with, that the patient remains fairly well nourished and that he does not further overtax the already somewhat reduced reserve capacity of the heart, there seems to be no reason why it should fail. The patient rarely voluntarily overtaxes the heart, because of his easy fatigability and the dyspnea which comes with moderate exertion. This dyspnea on exertion is due to the lowered vital capacity of the lungs and the lowered reserve capacity of the heart. There are probably only three reasons why the heart should fail, namely, (1) still greater reduction of the reserve capacity of the heart by an extreme degree of increase in the metabolic rate and general malnutrition, which is relatively rare, and which usually causes the whole organism to fail rather than the heart alone; (2) dissipation of the remaining reserve capacity of the heart by age or by pathologic conditions which cause premature aging of the heart, such as hypertension and coronary sclerosis; and (3) the occurrence of infections or intoxi-

cations which throw an added burden on the heart and which may also affect the heart directly.

## Summary and Conclusions

The following points concerning the circulation in hyperthyroidism are emphasized:

(1) Cardiac overactivity is a constant and prominent feature of the condition.

(2) In hyperthyroidism there exists an increased demand for oxygen which is satisfied by a coincidental increase in cardiac output and in rate of the circulation. This is accomplished chiefly by the tachycardia, which is not due to any of the usual reflex causes, but is inherent in the myocardium because of excessive thyroxine therein. Subsidiary factors are augmented force of the heartbeat, peripheral vascular relaxation, an increase in circulating blood volume and greater depth and frequency of respiration. The tachycardia probably accounts for the greatest part of the increased cardiac output. It is a well established physiologic principle that, providing there is adequate diastolic filling of the heart, an increase in its rate will bring about a proportional increase in minute volume output.

(3) The vital capacity of the lungs and the reserve capacity of the heart are necessarily reduced, but as long as restorative processes keep pace with catabolic processes this merely means limitation of activity of the individual.

(4) The heart does not become greatly hypertrophied and there are no distinctive or significant pathologic lesions in the heart.

(5) Congestive heart failure is not common. When it occurs there is some additional reduction of the reserve capacity of the heart by other factors, such as age, malnutrition, coronary sclerosis and hypertension.

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## A Doctor's Reverie.

A friend visiting Dr. G. G. Snarr, in Winchester, Va., recently was attracted by the following lines which the doctor had penned at the end of a day's work, and asked permission to have them published in the MONTHLY. It is a pleasure to reproduce them, as we are sure many doctors have had the same feelings but may have lacked the artist's conception to portray them:

"I may not have had as many patients today as I had yesterday but the other man has to live also.

"Did I lose a patient by dissatisfaction today? If so, I tried to do my best and I believe others have the same experience and I will not hold malice toward them.

"Did I make an ugly remark about my fellowman, either with the motive of avarice or in a fit of anger? I hope not and I will not do it again even if he does.

"Did I do all in my power for the good of my patients in the kindest way possible? I tried to.

"If I am tired late in the day after some difficult operations and a busy day's work, and I am not as kind as you think I should be, please tell me so that I may apologize and improve in manner and practice.

"Honesty, Kindness and Charity are cherished by everyone."

## INFANT FEEDING.*

JAMES B. STONE, M. D., Richmond, Va.

Infant feeding has been described as "the science of the physiological action of those food constituents necessary to life and growth and as the art of their application in such quantities and proportions as to best meet the physiological requirements and developmental and pathological limitations peculiar to each age and to each individual."

Until the latter half of the Nineteenth Century, infant feeding was almost entirely of an empirical nature. Scientific infant feeding had its beginning in Europe in the work of Biedert, starting in 1869. He made extensive studies on the chemical and physiological properties of cow's milk as compared to human milk. In this country at about the same time Rotch and Jacobi were also doing pioneer work in this field.

In the last three decades there have been many and rapid advances in the science and art of feeding babies. The importance of this subject can be appreciated by a study of mortality figures. It has been estimated that "one-fourth of the civilized race die during the first year of life, and that 60 per cent of these deaths are due to nutritional disturbances, while a large portion of the other 40 per cent are primarily dependent upon impairment of the infant's constitution by improper feeding." In the feeding of infants it is necessary to keep in mind not only the immediate disturbance of digestion, but also the remote consequences of improper management. Errors in feeding may lead to such disorders as rickets, scurvy, and general malnutrition, and these conditions in turn predispose to other diseases.

Many methods or systems of infant feeding have been advanced, and each has had its ardent supporters. The various systems each have merit, but no general rule of feeding will apply to all babies.

### Individualization Necessary

Different types of infants must be recognized. The full term strong active normally developed child presents much elasticity in both his food requirements and food tolerance, and will do well in spite of much mismanagement. However, there are many variations from this type. We have, for example: (1) the over-weight inactive child whose food requirements are below the theoretical requirements, (2) the under-weight infant who needs more than his weight calls for, but who will not gain rapidly on any food, and has to be treated with patience rather than over anxious effort to bring about a rapid increase in weight, (3) the constitutionally inferior child who cannot in any way be made to grow and develop at the usual rate, and (4) the child with definite loss of digestive capacity due to previous inadequate nourishment. There are many other variations. Each infant needs to be considered as an individual problem. In the words of Jacobi: "You cannot feed babies with mathematics; you must feed them with brains." The rate of growth, the state of nutrition and the stage of development all enter into the determination of the individual infant's food requirements.

*Read before the Alleghany-Bath County Medical Society, September 29, 1932.

### Metabolism, Essential Food Components, and Physiology of Digestion

The successful and intelligent feeding of infants demands an understanding of some of the fundamental facts regarding metabolism, food components, and their digestion in infancy.

*Metabolism and Food Components.*—Metabolic processes are more active in the infant than in the adult, and the energy requirements are relatively greater. Food must be supplied not only to replace what is lost in the ordinary wear and tear of living, but to meet the needs for growth. New tissues must be built up, and to meet this requirement more food must be furnished than is needed to meet the replacement demands. The caloric requirements during the first week or ten days of life are low, 25 to 35 calories per pound of body weight; after this, usually up to about six months, the requirement is from 45 to 55, and from six to twelve months 40 to 45 calories per pound.

The calories necessary to meet the total body requirements must be obtained from food that is both quantitatively and qualitatively correct. It must contain adequate amounts of protein, carbohydrate, fat, minerals, vitamines, and water.

All proteins do not have the same composition. To be suitable for infant feeding the protein must contain certain essential amino acids. Such protein is found in both human and cow's milk, though the proportions of these amino acids differ in the two milks. The normal infant's protein requirements are met when he receives approximately 2½ ounces of breast

milk, or 1½ ounces of cow's milk per pound of body weight per day. These quantities supply about 1 gram of protein per pound in the case of the breast fed infant, and about 1¾ gram per pound in the case of the infant fed on cow's milk, and furnish the amino acids essential for normal growth. These figures are for the infant of normal weight for his age and need to be correspondingly increased for the underweight infant. It is better to feed a slight excess of protein than too little.

The carbohydrate needs are about 5 or 6 grams per pound of body weight per day, and in the case of the artificially fed infant this calls for the addition of about 1 part of carbohydrate to each 11 to 20 parts of milk used in the formula, depending on the age and condition of the infant. The carbohydrates most generally used are milk sugar, cane sugar, or the dextrin and maltose mixtures, such as dextrimaltose, Karo, and Mellin's Food. In choosing the carbohydrate, consideration must be given to the ease of digestion and absorption, the degree to which it is fermented in the gastro-intestinal tract, and the amount of irritation that it causes. From these standpoints the sugars composed largely of dextrin and maltose mixtures seem to more nearly meet the needs of the average infant, though the others also can often be used with good results, and in certain cases may be especially indicated.

Fats are desirable on account of their caloric value and for their vitamine content. Breast milk that meets the infant's caloric needs contains an adequate amount of fat. Likewise, when whole cow's milk is fed in sufficient amount to meet the infant's protein needs, sufficient fat will also be supplied. Of the different food elements fat is the most difficult to digest, and extra rich cow's milk is rarely if ever indicated in infant feeding.

Both breast milk and cow's milk when fed in amounts sufficient to meet the infant's protein needs provide an adequate amount of the inorganic minerals, with the possible exception of iron in the case of cow's milk. The full term infant has a fair amount of iron stored in the liver at birth, but this reserve supply is usually nearly exhausted by the age of six months unless an extra amount is given from some other source than cow's milk. Due to this small amount of iron in cow's milk it is usually desirable soon after the age of six months to provide the artificially fed infant with extra iron in the form of green vegetables, meat juice, egg yolk and cereals.

The water requirement in infancy is relatively high. Insufficient water is incompatible with normal growth and development, and in certain cases where there is marked vomiting or diarrhea leading to an excess of output over intake of water a very serious condition of dehydration may arise and eventually lead to a fatal termination. The daily fluid requirement of the normal infant varies from 2 to 3 ounces per pound of body weight. When artificially fed infants are given concentrated formulas, a considerable quantity of additional water should be offered between feedings.

The vitamines are essential to health, though their chemistry and mode of action is not clearly understood. Those known to be essential for infants are A, B, C, and D. The fat soluble A and D vitamines should be added to the diet of all artificially fed and many breast fed infants by the end of the first month of life. They are best supplied by cod liver oil. Viosterol provides D but not A and so is not an adequate substitute for cod liver oil. Haliver oil has also been successfully used as a source of A and D.

Vitamine C should be given all artificially fed infants by the second or third month. Orange juice or tomato juice may be used to furnish this vitamine.

When an adequate amount of milk is being given it is rarely necessary to resort to additional sources of supply of vitamine B. Besides being in milk, vitamine B is widely distributed in nature and with the addition to the diet of other foods than milk extra amounts of this vitamine are provided as the infant grows older. Marriott states that he has rarely if ever observed beneficial effects which could be attributed to the administration of extra vitamine B.

*Digestion.*—Consideration must be given to the manner of digestion of the different food elements in the gastro-intestinal tract, in order to understand the problems presented in infant feeding.

In the infant's stomach the milk casein is coagulated by rennin, and under the influence of the pepsin rennin ferment, in the presence of the stomach acid, protein digestion is begun, though the process of digestion in the stomach is very incomplete. Normally there is enough acid in the stomach to inhibit the

growth of bacteria, and though the combined duodenal secretions are alkaline, the chyme emptying from the stomach is sufficiently acid for the inhibitory effect on the growth of bacteria to be continued in the duodenum and upper jejunum. Under the influence of the pancreatic ferments, bile, and succus entericus of the small intestine, the digestion of protein and carbohydrate is continued and digestion of fats is begun and continued throughout the small intestines. Protein is normally absorbed after being converted to amino acids; the carbohydrates are absorbed as monosaccharides and the fats chiefly as fatty acids and glycerine. In the large intestine there is much absorption of water, but very little digestion or absorption of food elements.

*Conditions That Influence Digestion.*—Relative to the effect on digestion of the food itself, neutralization to an excessive degree of the normal stomach acid interferes with gastric digestion and slows the emptying of the stomach, and by rendering the contents of the upper intestinal tract less acid, or even alkaline, promotes the abnormal growth of bacteria in the jejunum and duodenum with resulting impairment of digestion. In the presence of the lowered acidity and impaired digestion, bacterial action on the carbohydrates may lead to the formation of organic acids that are irritating to the intestine. Excessive carbohydrate fermentation also leads to interference with the digestion of other food elements. There is lessened absorption of the fats in the presence of excessive carbohydrate fermentation and in the case of cow's milk feedings there is likely to be irritation from the lower members of the fatty acid series. The abnormal presence of bacteria in the upper intestine may also, by their proteolytic activity, lead to gastro-intestinal disturbances.

In addition to the above factors, the infant's digestion is markedly influenced by conditions outside of the gastro-intestinal tract. Malnutrition, fever, high external temperature, chilling of the body surface, fright, pain or infection of any kind all lead to impaired digestion, probably due to interference with the secretion of the normal digestive ferments.

### Breast Feeding

A good quality of breast milk from a healthy mother on an adequate diet is recognized as the best infant food. It is more readily digested, is free from harmful bacteria, and the infant runs less chance of being upset through errors in the preparation of the feedings. In general, babies fed on a good quality of breast milk are healthier than those on artificial food. Such milk contains all the food elements needed for the nutrition of the infant during the first six months of life, with the possible exception of the vitamines of cod liver oil.

Attention to the diet and hygiene of nursing mothers will enable a large percentage of them to nurse their babies during the important early months of life. The milk of a healthy mother usually agrees with the baby if it is sufficient in quantity, and the baby is nursed regularly. However, prolonged attempts to feed exclusively on breast milk that is inadequate and on which the baby is evidently not thriving, should be avoided. When approximately half of the infant's food requirements can be supplied by the mother's milk, nursing should be continued and the deficit made up by complemental feedings given just after one or more of the nursings. After six months of age other articles of diet to be mentioned later should be added.

### Artificial Feeding

In the absence of an adequate supply of human milk it is necessary to provide the infant with an artificial food. In this country the most usual substitute for mother's milk is some form of cow's milk mixture. No one method of preparing the artificial feedings is to be considered the only correct one. Equally good results have been obtained by workers using different feeding methods.

As stated by Marriott, the requirements of a satisfactory artificial feeding are:

1. Sufficient calories.
2. Sufficient protein, carbohydrate, mineral salts, water, and the vitamines A, B, C and D.
3. There must be no harmful bacteria present.
4. The food must be digestible.

Intelligent application of these principles will produce good results whatever system of feeding is followed.

Cow's milk to which carbohydrate is added will supply sufficient calories, and in proper proportions will supply the essential food elements mentioned, including the B vitamine. The A and D vitamines are added in the form

of cod liver oil, or by cod liver oil in conjunction with Viosterol, sunshine, or ultraviolet irradiation. Addition of orange juice or tomato juice provides the needed C vitamine. Harmful bacteria are eliminated by using boiled or pasteurized milk, sterilizing all utensils, and exercising scrupulous care in the handling and giving of the food.

The digestibility of the food is an important consideration. There are certain striking differences between human milk and cow's milk, and various methods are employed in the modification of cow's milk to render its digestibility more nearly equal to that of human milk.

### Comparison of Cow's Milk and Human Milk

Raw cow's milk in the infant's stomach is coagulated to form large tough casein curds that are not easily penetrated by the digestive juices, and consequently are difficult to digest. This condition is corrected to varying degrees in numerous ways, such as: boiling the milk, or subjecting it to even higher temperature (as in the case of evaporated and dried milks), by dilution with water or cereal gruels, or by the addition of lime water or acid, all of which procedures lead to changes in the physical properties of the casein. Furthermore, the high buffer content of cow's milk renders it less digestible on account of its neutralizing effect on the stomach acid. This effect may be overcome by the addition of acid to the milk. This not only lowers the buffer value of the milk, and so spares the acid of the stomach, but also results in the precipitation of casein curds in a finely divided form, and in this way makes them more easily digested. Diluting cow's milk to about 1/3 strength also lowers the buffer value to approximately that of breast milk. However, this degree of dilution also lowers the caloric value to such an extent as to make it difficult to give the infant an adequate amount of food. The objection to the addition of alkalis to the formula is their neutralizing effect on the normal stomach acid.

The protein of cow's milk is about 85 per cent casein, whereas in human milk about two-thirds of the protein is lactalbumin which is much more easily digested and contains a larger proportion of the essential amino acids.

The fat of cow's milk is coarser than in human milk. This is largely overcome by the process of homogeneization in case of the evaporated and dried milks. About 50 per cent of the fat in human milk is in the form of the easily digested tri-olein, while in cow's milk there is a much larger proportion of the tri-palmitin and tri-stearin which are more difficult to digest. Cow's milk fat also has a larger proportion of the glycerides of the volatile fatty acids which are more apt to cause irritation when broken down in the intestinal tract.

The sugar is the same in cow's milk as in human milk, though the latter contains a higher percentage.

With the exception of iron, the mineral constituents of cow's milk are more abundant than in human milk.

The vitamines A, B, C and D are all present in cow's milk, but C is destroyed by heating. Extra additions of A and D are needed even more than in the case of breast fed infants. C should be added in the form of orange juice or tomato juice.

### Whole Sweet Milk Mixtures

The full term healthy infant can usually be successfully fed on simple mixtures of whole sweet milk, sugar and water. There is considerable variation in the food needs and the digestive capacity of different infants. Consequently, the formula for the individual infant cannot be prepared by any fixed rule of thumb. However, certain general principles may be followed to advantage, and variations made according to the needs of the individual child.

It is necessary to consider the weight, age, size, appetite, previous health, and present general condition of the baby in calculating the formula. The weight is probably the most important single item, and due allowance should be made for any marked variation from the usual weight at a particular age. Food requirements should be figured on the basis of approximately an average between the actual and the expected weight, leaning toward the expected weight for the given age. Keeping this in mind, the amount of whole milk to be used in the formula to supply the protein needs will be from 1½ to 2 ounces per pound of body weight. This quantity of milk also furnishes an adequate amount of fat. Carbohydrate is added to increase the caloric

value and also aid in the proper utilization of the fat and protein to be assimilated. The amount of carbohydrate to be added in the early months of life should be about 1 part to each 11 or 12 parts of milk, which amounts to about 1½ ounces to each pint of milk used in the mixture. After six months the carbohydrate is reduced to about 1 part to 15 and after 8 months to about 1 part to 20 or 30 of milk. Usually a larger amount of carbohydrate in the form of dextrin and maltrose mixtures can be used than of either lactose or cane sugar. The above quantities may, of course, need to be reduced to meet the digestive capacity of some infants. Water is added both to make the mixture more digestible and to meet the fluid needs of the body. In order to supply the fluid needs of the infant the total formula should contain from 2½ to 3 ounces per pound of body weight. The difference between this total fluid requirement and the amount of milk used is the quantity of water needed in the formula. If more concentrated formulas are used, the additional water must be given between feedings. Excepting those cases in which there is a small gastric capacity it is well to give this water as part of the formula, since by this dilution the food is rendered more digestible. Depending on the age of the child, feedings are given at 3 or 4 hour intervals, the number of feedings in 24 hours during the first year being 7, 6 or 5. The quantity per feeding is the total formula divided equally among the number of feedings to be given. The largest quantity of milk given in 24 hours should rarely, if ever, exceed one quart, nor the total formula be more than 40 ounces.

As a rule it is better to start with a slightly more dilute mixture than what is stated above, and increase the strength as the digestive capacity of the infant becomes evident. Somewhat smaller feedings are also indicated during the first week or ten days of life.

The milk and sugar solution should be boiled throughout the first year, and in most cases this can be continued to advantage through the second year. Boiling makes the food more digestible and frees it from harmful bacteria. The use of cereal water as a diluent also helps to prevent the formation of large tough curds in the stomach and is often of value in promoting the digestibility of the mixture.

Increases in the formula should be made gradually and as a rule only one ingredient changed at a time. The child's appetite, weight curve, and state of digestion as indicated by the stools are useful guides in determining the rate at which the food is to be increased.

For the sake of their vitamines, cod liver oil and orange juice or tomato juice should be given by the end of the first month. Cod liver oil or viosterol are often needed at an earlier age, especially in the case of the premature infant. Other foods than milk are also needed by about the sixth month. This is particularly true of the artificially fed infant because of the deficiency of iron in cow's milk. To make up for the deficiencies of the milk, cooked cereals and vegetable soups are added at about this time, and soon followed by egg yolk, meat juice, vegetable puree (especially from the pigmented vegetables), meat broths, and stewed fruits. With the addition of carbohydrate in the form of starch, the sugar in the formula is gradually reduced, until it is all eliminated by about the twelfth month.

### Evaporated Milk

Unsweetened evaporated milk has certain distinct advantages in the feeding of some infants who do not thrive on fresh sweet milk mixtures. Evaporated milk has been concentrated to about twice the strength of whole milk. Diluting with an equal volume of water gives approximately a reconstituted whole milk. The chief advantages of evaporated milk are its uniformity of composition, greater digestibility, and freedom from bacteria. In the process of manufacture, the milk is homogenized so that the fat globules are reduced to a very minute size. The protein is so changed by the heating process that when acted on by the stomach secretions, very fine curds, comparable to those from breast milk, are formed. Furthermore, the protein of evaporated milk has been so changed as to make it less likely to produce allergical reactions in those infants sensitized to cow's milk protein. The buffer value of evaporated milk is very similar to that of fresh cow's milk. The C vitamine is destroyed by the heating and both this factor and the A and D vitamines need to be added as in the case of feeding on sterile fresh milk mixtures.

Evaporated milk formulas are prepared simi-

lar to the fresh sweet milk mixtures, remembering that one part of evaporated milk is equivalent to two of fresh milk. The evaporated milk, being already sterile and homogenized, does not need to be boiled. Being more easily digested it can be fed in somewhat higher concentrations than fresh sweet milk; but when this is done additional water should be offered between feedings, especially in hot weather.

### Acid Milks

Sweet milk, whether fresh or evaporated, can be rendered more digestible by lactic acid whether from the growth of lactic acid producing bacteria, or by the addition of chemically pure lactic acid. A number of other acids than lactic have a similar effect. Orange juice, lemon juice, hydrochloric acid, and pure citric acid have all been used for this purpose. Lactic acid has had more general use than the others.

Acidifying the milk neutralizes a portion of the buffer substances present, so that when it is fed the acidity of the stomach contents at the height of digestion is more nearly like that found when breast milk is given. The acid precipitates the casein curds in a very finely divided state and so makes them more easily digested. The acidity also inhibits the growth of bacteria, favors emptying of the stomach, and promotes the flow of bile and the pancreatic and intestinal digestive juices. The relatively greater acidity of the upper intestinal tract when acid milk is fed also favors the absorption of calcium salts, and tends to prevent the abnormal activity of bacteria in causing carbohydrate fermentation in this portion of the intestines. The quick absorption of the acid, together with the increased secretion of the alkaline intestinal juices usually renders the lower portion of the intestinal tract strongly alkaline.

The acid milk mixtures are said to approximate human milk in digestibility and can usually be fed with much less dilution. They are especially of value in the feeding of prematures or in other cases where there is a deficiency of acid in the stomach or a small gastric capacity, so that a large volume of food cannot be taken at a feeding. Also, many undernourished or delicate infants will do much better on acidified milk than on sweet milk.

Carbohydrate is added in amounts similar to those used in sweet milk formulas; that is, about 1½ ounces to each pint of milk up to six months of age, and in gradually lessening amounts from six to twelve months, when it is usually eliminated. When concentrated formulas of acid milk are fed, extra water should be given between feedings to meet the infant's fluid requirements.

When acidified milk is prepared with U.S.P. lactic acid, from 1 to 1½ teaspoons of the acid is used to each quart of milk (one teaspoonful of lactic acid contains approximately 100 drops). The milk should be boiled and thoroughly cooled and the acid added slowly, a few drops at a time, while constantly stirring. Or the acid can be added to the water to be used in the formula, and this acid water poured slowly into the cold boiled milk, while constantly stirring. In preparing these formulas it is important that the milk be *cool*, after having been boiled, and that the acid be added *slowly*, while constantly *stirring*. If these precautions are not observed, large curds may form and make the milk unsuitable for feeding.

Karo syrup, or one of the dextrin and maltose mixtures, is the carbohydrate of choice in these feedings. This can be boiled in the milk or water before the acid is added, or in the case of the older infants may be stirred directly into the acid milk.

Acid feedings may be prepared from evaporated milk, using only half as much evaporated milk as fresh milk. It is not necessary to boil the evaporated milk.

Acidified evaporated milk has the combined advantages of sweet evaporated milk plus those of acidified fresh milk.

The curds from bacterially soured milk are somewhat finer than those in milk soured by addition of lactic acid, but clinically there seems to be little practical difference in the digestibility of the two.

Some authorities advocate the feeding of undiluted lactic acid milk practically from birth, but others claim to have obtained better results with dilutions similar to the dilutions made in sweet milk formulas. Additional water needs to be given between feedings if not included in the formula, and my own practice has been to dilute the acid milk with the quantity of water theoretically needed to meet the infant's fluid requirements. Exception to this is made where there is evidence of small stomach capacity.

### Foods Needed in First Year

Normal infants can be fed in a variety of ways, but during the first year the nutritional requirements can be met by using simple mixtures of sweet or acid milk, sugar and water for the formula; starting orange juice and cod liver oil in the early months, and supplementing these articles with cereals, vegetable soup, egg yolk, meat juices or broths, and strained vegetables during the second six months.

### Proprietary Foods

A number of dried and powdered sweet milk preparations as well as acid ones are available, and some of these, when diluted with the proper amount of water, make a reconstructed milk entirely suitable for use in infant formulas. Some allergic infants with marked sensitization to the protein of cow's milk have been successfully fed on a preparation of soy bean flour called "Sobee" (Mead Johnson & Co.). Sweetened condensed milk has too little protein, fat, and minerals for it to be suitable as an infant food over any long period of time.

### Foods Needed in Second Year

During the early part of the second year, four or five feedings a day are given. This number is soon reduced to four meals, and later to three before the end of the year. Undiluted whole milk, sweet or acid, is given in quantities varying from a pint to a quart daily. Besides milk, the diet should contain cereals, bread, green and starchy vegetables, eggs, broths, meat (preferably beef, lamb, mutton, chicken or fish), citrous fruits and cooked fruits. Simple desserts, though not essential, may be given. Included among those preferred are simple custards, rice or cornstarch puddings, junket, and cooked fruits.

### Complete History and Physical Examination Important

The successful feeding of all infants is not an easy matter. Many factors other than the actual food often have a tremendous influence on the child's digestion. When this fact is kept in mind, the importance of a careful and detailed history and physical examination is evident. Failure to thrive may mean poor hygienic management, an environment surcharged with nervous tension, organic disease or infection, or any one of a number of conditions far removed from the gastro-intestinal tract. The explanation of a sudden attack of loose stools, for example, may sometimes be found by looking at the baby's throat and discovering a pharyngeal infection; or examination of the ears with an otoscope may disclose an inflamed eardrum as the causative factor. These and other possibilities should be eliminated before the difficulty is attributed to the food itself.

### Summary

1. Infants cannot be successfully fed by any one fixed rule.
2. Infant feeding is based on due observance of fundamental principles regarding the infant's needs and digestion, and in the application of these it is necessary to make due allowance for variations in the individual.
3. Metabolic and digestive conditions in the infant present certain differences from those in older children or adults.
4. Breast feeding is to be preferred when the quantity and quality of the milk is adequate, but efforts to continue feeding exclusively on the breast a baby who is evidently not getting sufficient food should not be unduly prolonged.
5. There are fundamental differences between human milk and cow's milk. These differences are pointed out and methods of modifying cow's milk to make it suitable for infant feeding are described.
6. Food requirements other than milk during the first two years are discussed.
7. Many factors other than the food itself influence digestion, and a complete history and careful physical examination are of utmost importance in determining the infant's needs and digestive capacity, and in solving the problems presented by the individual case if success in infant feeding is to be attained.

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# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka St., Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Ave, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 S. Market St., Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Ave., Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Ave., Richmond.

## News from Local Auxiliaries.

### Warwick County Auxiliary

The Woman's Auxiliary to the Warwick County Medical Society which was formed the latter part of February, held its second meeting on April 12, 1933, with Mrs. W. S. Snead, President, presiding.

Plans were discussed for a card party to be given on May 10th, the proceeds of which are to go to charitable work.

The Auxiliary is showing much enthusiasm in its work and expects to accomplish much good in the future.

Mrs. J. W. Sayre,
*Corresponding Secretary.*

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This Auxiliary has sixteen members, with the followings officers:

Mrs. W. S. Snead—*President*
Mrs. E. L. Alexander—*First Vice-President*
Mrs. A. A. Creecy—*Second Vice-President*
Mrs. L. E. Stubbs—*Third Vice-President*
Mrs. L. J. Richman—*Treasurer*
Mrs. J. W. Sayre—*Corresponding Secretary*
Mrs. C. B. Courtney—*Recording Secretary*

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### James City, New Kent Auxiliary

Mrs. J. R. Tucker, of Williamsburg, held a meeting at her home, May 8, 1933, to organize the Woman's Auxiliary to the James City, New Kent Medical Society. Mrs. W. L. Harris, State President of the Medical Society of Virginia Auxiliary, was present and gave a talk on the subject of health and work that other auxiliaries are doing, explaining the aim, purpose, and necessity for such an organization. Mrs. M. N. King, of Norfolk, Chairman of this district, assisted Mrs. Harris in the organization of the Auxiliary and also gave a very interesting talk.

Mrs. W. S. Snead, of Newport News, President of Warwick County Auxiliary, gave a talk on the work that they are doing at the present time. Mrs. J. J. Cullinan, of Hampton, President of Elizabeth City County Auxiliary, was also present.

The meeting was called to order by Mrs. W. L. Harris and the following officers were elected:

Mrs. J. Randolph Tucker—*President*
Mrs. A. M. Sneed—*Vice-President*
Mrs. E. B. Kilby—*Secretary*
Mrs. B. I. Bell—*Treasurer*

The Auxiliary will sponsor health work, advance health education in cooperation with clubs, and health work in James City, New Kent Counties.

Members present were Mrs. J. R. Parker, Mrs. A. M. Sneed, Mrs. T. B. Henderson, Mrs. L. V. Henderson, Mrs. B. I. Bell, Mrs. J. R. Tucker, Mrs. W. L. L. Smoot, Mrs. E. T. Terrell, and Mrs. E. B. Kilby.

The next meeting will be held at the home of Mrs. A. M. Sneed, May 29, 1933, at 3:30 P. M.

Mrs. E. B. Kilby, *Secretary.*

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### Norfolk County Auxiliary

The Woman's Auxiliary to the Norfolk County Medical Society met in the Medical Hall at half past two o'clock Wednesday afternoon, May 10th. Fifty members were present. There were interesting reports from the various Chairmen of Sections on the work that has been done.

Mrs. N. G. Wilson had written a sketch of the life of our late and dearly beloved Dr. Kirkland Ruffin, which was read by Mrs. T. S. Garnett, Jr.

Mrs. Southgate Leigh read an interesting report of the cost of medical care.

The contest sponsored by the Auxiliary for the best paper written by children of the Junior High schools brought in more than 600 papers, many of them being unusually fine. The two prizes—gold pieces—were awarded by Mrs. Redwood, and the papers read by the young writers. The best paper from Ruffner was won by Virginia McDonald, and the prize awarded at Blair was presented to Louis Reeves.

A letter of resignation was read from the President-Elect, Mrs. Charles A. Saunders. Owing to ill health she is unable to assume her duties. The resignation was accepted with sincere regret. Mrs. James B. Abbitt was elected to fill this position.

Mrs. Franklin D. Wilson, President of the

Auxiliary entertained the members of the Auxiliary at a garden party at her lovely suburban home. Rrefreshments were served by the members of the Junior Auxiliary, and a most delightful afternoon was spent.

Emily T. Allen.
*Publicity Chairman.*

# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted:

Cutter Laboratory
- Polyanaerobic Antitoxin, Prophylactic (Tetanus-Gas Gangrene Antitoxin).
- Polyanaerobic Antitoxin, Therapeutic (Gas Gangrene Antitoxin).

E. Fougera & Co.
- Capsules Lipiodol—Lafay, 0.5 Gm.
- Tablets Lipiodol—Lafay, 0.04 Gm.

Merck & Co., Inc.
- Calcium Gluconate—Merck.
- Phenobarbital Sodium—Merck.

G. D. Searle & Co.
- Sodium Morrhuate 5% with Benzyl Alcohol.

### Propaganda for Reform

Crazy Crystals.—During the past year a large number of inquiries have come to the Bureau of Investigation for information on the product known as "Crazy Crystals," put out by the Crazy Water Company, of Mineral Wells, Texas. According to the advertising, Crazy Crystals are nothing more mysterious than the mineral constituents evaporated "from the mineral waters found at Mineral Wells, Texas, and Thorndale, Texas." In the earlier days the product that was most advertised was Crazy Water, although there was also sold "Crazy Water Concentrated," which was said to be Crazy Water that had been evaporated to one-fifteenth of the bulk of the natural water. Later, when the thing developed commercially, there seem to have been four Crazy Waters, presumably from four different wells. According to the analyses furnished, all four contained the same ingredients, but these ingredients varied in quantity. In all of them, however, Glauber's salt (sodium sulphate) was the predominating ingredient.. But whatever one accepts as the correct composition of the various Crazy Waters it must be obvious that unless the claims for composition are wholly false, Crazy Crystals are, for all practical purposes, Glauber's salt, with certain added amounts of washing soda and epsom salt, common salt and other salines. Crazy Crystals are advertised by typical "patent medicine" methods. In addition to radio talks, there are advertising leaflets of a type common to nostrum exploitation. We are told directly that Crazy Crystals have been used successfully in the treatment of High Blood Pressure, Stomach Disorders, Auto-Intoxication, Nervous Ailments, Neuritis, Arthritis, Kidney Trouble, Bad Complexion, Excess Acidity, Constipation, Rheumatism, Diabetes, Liver and Bladder Troubles. Summed up, it may be said that the dollar-and-a-half package of Crazy Crystals will accomplish nothing that cannot be accomplished equally well with a few cents' worth of Glauber's salt. The attempt, in the radio advertising of Crazy Crystals, to make the public believe that the preparation is not a drug, is simply playing tricks with the English language. The Crazy Crystals product is just as much a drug as Glauber's salt, epsom salt, or any other saline laxative sold for the treatment of human ailments. (Jour. A. M. A., March 11, 1933, p. 760).

Pepsin and Rennin.—The ability of gastric juice to clot milk has been ascribed to a special proteolytic enzyme, chymosin or rennin. Recently, the isolation, in comparatively pure form, of a rennin preparation from the mucosa of the fourth stomach of the calf, has been reported. This preparation shows the highest clotting power yet reported; at the same time it is practically devoid of peptic activity. The elementary composition and the properties of the preparation indicate that it is a thioproteose and, unlike pepsin, it contains neither chlorine nor phosphorus. Rennin is irreversibly inactivated by alkali, it is easily soluble in dilute acid, it is not coagulated by heat, it gives quite different protein color tests, it is not dialyzable, and it is soluble in water at its iso-electric point, whereas pepsin is not. The investigators have shown that the enzyme is present in the mucosa in the form of a precursor that becomes activated, as does pepsinogen, by hydrochloric acid. Efforts to obtain rennin in crystalline form, as has been accomplished for urease, pepsin, trypsin and amylase, are yet unsuccessful. (Jour. A. M. A., September 3, 1932, p. 835).

Convalescent Serum in the Treatment of Poliomyelitis.—The status of the treatment of preparalytic cases of acute poliomyelitis seems to require clarification. Although prevailing clinical opinions as to the efficiency of the treatment have been optimistic, few investigations have been adequately controlled. In two recent reports of controlled therapeutic tests, the evidence provided is not encouraging. Kramer, Aycock, Solomon and Thenebe record eighty-two cases about equally divided between those who received convalescent serum and those who did not. The Boston investigators concluded that their study offered no statistical evidence that convalescent serum is effective. Together with members of the poliomyelitis committee of the New York Academy of Medicine and his associates in the municipal hospitals, Park studied a total of 927 preparalytic cases of poliomyelitis, 519 of which were treated with convalescent serum; 408 patients were not given serum. The results of this study likewise do not afford statistical proof that the use of serum has any value in cases in which the cells of the central nervous system are already involved. The fact that the two controlled therapeutic tests gave similar results suggests that heretofore too much confidence has been placed in the treatment with convalescent serum. The need now is for additional evidence based on controlled studies which take into account the variants that make the problem complex. (Jour. A. M. A., October 8, 1932, p. 1266).

Statements on Constipation in Lay Advertising for Roughage Foods and Bran.—The Committee on Foods reports that constipation may be due to causes other than those of dietary or "roughage" origin. Advertising to the laity shall refer to constipation due to insufficient roughage or food essentials only. Cases of constipation not yielding to the regular ingestion of foods providing considerable roughage should be under the care of a competent physician. A permissible claim for a roughage food follows: "Constipation due to insufficient roughage in the diet should yield to . . . eaten regularly. A competent physician should be consulted for cases not corrected in this simple manner." Wheat bran has laxative value. Whole grain cereals, and vegetables and fruits in general, are excellent sources of roughage. Bran itself may be irritating to sensitive bowels; the indigestible cellulose of vegetables and

fruits is much less irritating. (Jour. A. M. A., November 5, 1932, p 1605.)

Mahlon W. Locke.—This physician in the little village of Williamsburg, Ontario, occupies the stage as the Miracle Man of 1932. His stunt consists, as his enthusiastic proponents have declared, of "toe-twisting," and his specialty is what the public vaguely call rheumatism. Dr. Locke has been in the miracle-man business for at least two or three years, and in spite of the fact that it is claimed that he has developed a technic that brings him tens of thousands of patients annually, he has not seen fit to tell any other physicians about it; medical literature contains not a single article by him, so far as a careful search has been able to determine. Dr. Locke's publicity has been through the newspapers and magazines, the present interest being due to an article "The Pain-Killer" by Rex Beach in Hearst's *International-Cosmopolitan* for August, 1932. There seems to be a subsidiary industry in connection with Dr. Locke's manipulations—a shoe factory. Just what manipulation Dr. Locke gives is not clear, as he has not seen fit to pass on his magic formula to the medical profession. There is evidence to the effect that Dr. Locke manipulates the first metatarsal, internal cuneiform and scaphoid (navicular), with the thumb of one hand against the head of the scaphoid and the other hand holding the first metatarsal. By the law of averages, it is inevitable that a man treating tens of thousands of patients by manipulation and in the psychologic atmosphere inseparable from such a shrine, must persuade many that they have been benefited. In such large groups there must be many psychoneurotics whose inhibitions are lifted by the combined manipulations and psychic reactions of the surrounding circumstances, and who may testify that they have been cured. (Jour. A. M. A., November 19, 1932, p. 1798.)

Irradiated Milk.—Enough evidence is available, from the clinical as well as the experimental field, to give assurance that rickets can be averted. To give some idea of the number of antirachitic agents at present offered, mention may be made of cod-liver oil and cod-liver oil concentrates, viosterol (irradiated ergosterol) irradiated products of the utmost diversity, foods fortified with viosterol, and direct ultraviolet irradiation. Obviously, it ought to be of advantage if antirachitic properties could be imparted, without attending deterioration, in a suitable degree to a few foods that enjoy widespread use, particularly in the dietary of childhood. Probably the two most universally consumed foods are bread and milk. That is why interest has begun to be centered in these products as means of antirachitic prophylaxis. Milk is of particular interest because of its unrivaled content of calcium and phosphorous—the adjuvants of a properly planned antirachitic regimen. It is gratifying to learn through a recent communication of A. F. Hess and his co-worker that fluid milk can now be successfully activated at almost insignificant cost, that it retains its antirachitic potency after drying, and that both the fluid and the dried products have been extensively tested on children with satisfactory outcome. (Jour. A. M. A., November 26, 1932, p. 1864.)

Dangers of the Injection of Iodized Oils.—The Council on Pharmacy and Chemistry reports that it should be emphasized that the injection of iodized oils is essentially a surgical procedure, introducing a foreign and possibly irritant body, and involving more or less risk, which should be weighed against the presumptive advantages, in comparison with the relative advantages and disadvantages of other measures. From the report of the Council it appears that the following cautions should be especially borne in mind: 1. Oils that have aged and darkened beyond their original color should never be used. 2. Subarachnoid injections should be avoided, at least until all other means of diagnosis have been exhausted. 3. Intratracheal and intrapleural injections should be avoided in tuberculosis of the respiratory organs and also when restriction of respiratory area would be contraindicated. 4. The injection pressure should be carefully controlled, so as not to lacerate the tissues. 5. Intra-uterine injections should be made only under fluoroscopic observation. 6. Iodized oil should not be used for renal pyelography, except in the form of emulsion; and the injection should be stopped if pain is felt. 7. Intravascular injections with iodized oil appear too dangerous; the use of emulsions for this purpose requires further study. (Jour. A. M. A., December 3, 1932, p. 1946).

The Action of Copper in Iron Metabolism—The importance of copper as a supplement to iron for the regeneration of hemoglobin in anemic rats was demonstrated four years ago by Hart, Steenbock, Waddell and Elvehjem. These investigators showed definitely, as Elvehjem and Sherman have recently pointed out, that, in the presence of copper, soluble inorganic iron salts can be used directly for the formation of hemoglobin. Since that time a number of workers have studied factors affecting the production of hemoglobin in rats rendered anemic by whole milk diets. Most of this work has verified the original conclusions concerning the importance of copper; and today nearly all workers agree that copper is an active agent in hemoglobin synthesis. As Elvehjem and Sherman conclude, copper does not affect the assimilation of iron but does function in the conversion of inorganic iron into hemoglobin. In recording these studies it seems desirable to remember that the extent to which the experimental studies are applicable to the human being remains for the most part to be established. Copper is far more widespread in foods than may be commonly supposed. The need for copper is quantitatively far smaller than the requirement of iron. The newer knowledge should not be accepted as a warrant for uncontrolled administration of copper compounds to man. The facts regarding the possible actual needs and function of this element in human physiology remain to be more definitely ascertained. (Jour. A. M. A., December 17, 1932, p. 2114).

Colloidal Gold and Cancer.—"Collodaurum," a proprietary medicine said to consist of colloidal gold, is marketed by the Kahlenberg Laboratories, Inc., of Two Rivers, Wis. It is said to have been developed by Prof. Louis Kahlenberg, of the University of Wisconsin, and Dr. Edward H. Ochsner, and has been sold under the claim that it is "far superior to X-ray and radium in the treatment of inoperable cases of cancer, and also as postoperative treatment." As late as November, 1932, physicians have received circular letters urging them to try "Collodaurum" in cancer. In 1925, *The Journal* published a report of the Council on Pharmacy and Chemistry that pointed out that the claims for this product were not supported by acceptable evidence and were therefore unwarranted. *The Journal* has repeatedly said that, after all, time is the true test of any cancer cure. If a product offered for use in cancer had any real merit, its praises after eight years would have been so widely sung that its manufacturer would not have to promote it by either circulars or advertising. The continued sale of "Collodaurum" is a sad reflection both on the scientific judgment of those who use the product, and on those who lend their names to the promotion, and again an indication that cancer offers a fertile field for the promoter of any remedy for cancer that may be concocted. (Jour. A. M. A., December 24, 1932, p. 2188).

# Book Announcements

**Radiologic Maxims.** By HAROLD SWANBERG, B. Sc., M. D., F. A. C. P., Founder and Editor of Radiological Review. Radiological Review Publishing Company. Quincy, Illinois. December, 1932. Cloth. 12mo. of 127 pages. Price, $1.50.

Although this small book deals with a medical specialty, it is intended to appeal to the general profession. It consists principally of a compilation of material which has formed one of the features of the Radiological Review. This monthly publication, known to many of the profession, has as its aim the enlightenment of the practicing physician concerning the progress and possibilities of Roentgen ray diagnosis and therapy, radium treatment, the use of the ultra-violet ray and other forms of spectral therapy.

The amount of useful practical information which the volume contains is far greater than its size would indicate, on account of the conciseness of expression; each maxim is expressed in one paragraph, usually in a single sentence. The book also contains a good many somewhat longer quotations from leading surgeons and other specialists concerning the value of radiology in various fields.

It is stated that the manuscript was submitted before publication to a group of radiologists of national reputation for criticism, so that it may be considered as an expression of approved radiologic opinion.

The valuable feature is the complete subject index which renders the book useful for reference. The index shows the wide range of subjects discussed.

It is believed that the busy practitioner may often find here just the information he wants regarding the use of radiologic methods in the diagnosis or treatment of a given case. If he is sufficiently interested in the subjects discussed to read the book through, the chances are that he will feel well repaid. The volume will likewise be of interest to the radiologist and to the student of radiology.

D. D. TALLEY, JR., M. D.

**New and Nonofficial Remedies, 1933,** containing descriptions of articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1933. Cloth. Price, Postpaid, $1.50. Pp. 498; lvi. Chicago: American Medical Association.

The annual editions of this volume contain all that the busy physician needs to know concerning the newer preparations which he is daily importuned by the detail men of the pharmaceutical manufacturers to use. The remedies listed and described here have been examined and found acceptable by the Council on Pharmacy and Chemistry, the deliberative body charged by the American Medical Association with the performance of this service for the practitioner, who has not the time or means to make the determinations for himself.

The book contains general articles, descriptive of the classification under which the various drugs are listed.

**Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1932.** Cloth. Price, $1.00. Pp. 104. Chicago: American Medical Association.

The Council on Pharmacy and Chemistry still carries on its work of informing the medical profession concerning the new medicinal products brought out by the various manufacturers of pharmaceuticals. This volume contains the reports on products considered and rejected by the Council during the past year.

Besides the reports on rejected articles, the volume contains "Preliminary" and "Special" reports of exceptional timeliness and value.

**Gastric Anacidity.** Its Relation to Disease. By ARTHUR L. BLOOMFIELD, M. D., Professor of Medicine, Stanford University, San Francisco, California. And W. SCOTT POLLAND, M. D., Instructor in Medicine, Stanford University. New York. The Macmillan Company. 1933. Octavo of 188-ix pages. Cloth. Price, $2.50.

**Cervico-Vaginitis of Gonococcal Origin in Children.** Report of a Project of the Bellevue-Yorkville Health Demonstration of New York City. By WALTER M. BRUNET, M. D., DORA M. TOLLE, M. D., SARA ALICIA SCUDDER, and ANNE RUTH MEDCALF. Reprinted from the Hospital Social Service Magazine. Supplement No. 1, March, 1933. 97 pages.

**The Periodic Payment Plan for the Purchase of Hospital Care.** Recommendations of the Council on Community Relations and Administrative Practice of the American Hospital Association in Relation to Group Hospitalization Plans for People with Limited Incomes. February, 1933. Council of the American Hospital Association, 18 East Division Street, Chicago. Pamphlet of 6 pages.

**Diseases of Tradesmen.** By BERNARDINO RAMAZZINI (1633-1714). Together with biographical notes translated from the French of Francois Claude Mayer (1928) of Budapest and paragraphs from the preface of Dr. James (1746) of London, and of Dr. James (1922), of New York. The abstracts from the 1746 English translation of the Ramazzini work emphasize his comments on dermatological disturbances of workmen. Compiled by HERMAN GOODMAN, B. S., M. D., New York. With which is bound Silk Handlers' Disease of the Skin. Medical Lay Press. New York City. 12mo. of 95 pages. Cloth. Price, $1.50.

# Virginia Medical Monthly

Founded by Landon B. Edwards, M. D., April, 1874
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PUBLICATION COMMITTEE
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Volume 60 JUNE, 1933 No. 3


# Editorial

## Chronic Vascular Disease in the Brain.

Brief comment concerning the importance of understanding the significance of vascular changes in the brain seems justified here. General practitioners are daily meeting cases of this sort. In every-day work, some patient is observed with evidence of this affection. It is a question of serious import. It is too often lightly considered by practitioners. To awaken a more active interest in the grave significance of vascular deterioration of the brain is the object of this comment.

Cerebral vascular disease lies well within the domain of internal medicine for a large part of its course. When the cerebral hemorrhage comes, the patient is stricken with a suspension of brain functions. Instantly brain symptoms dominate the picture, but for the many months, if not years, before the vascular crisis and accident these patients may be said to be fit persons for the care of the general practitioner or internist. It is the purpose of these comments to draw attention, therefore, to that long period before the calamity of cerebral hemorrhage and to impress the idea that more may be done if an interpretation of the symptoms is made.

Cerebral hemorrhage, one of the most common terminal events of chronic vascular disease of the brain, may be likened to a dreadful accident to some fine collection of paintings in a museum. Through failure of the custodian to interpret the significance of certain changes in the timbers of the ceiling or the roof, suddenly, under the effects of storm or wind the collection of artistic skill may be destroyed or greatly impaired. So, it may be, no matter how fine the brain values, through the baneful catastrophe of a rupture of a cerebral arterial, all or much of the usefulness of the brain may be immediately and tragically altered or obliterated. Besides this, a more gradual deterioration may obtain in chronic vascular disease. With advancing years, through the effects of sclerotic changes in arterial walls, brain function may become insidiously altered. To delay the consummation of these harmful changes is the prime office of the practitioner. Of course, such changes may be indefinitely postponed. Eventually, with decade piled on decade, in these cases, brain function fails—intelligent medical care notwithstanding. To reach a more normal function is only a reasonable medical goal in such cases.

One may plead then for a more careful study of so-called "high blood pressure cases." One may urge a more searching inquiry into the factors surrounding the setting in of arteriosclerotic changes and a more discriminating evaluation of the signs and symptoms in the earlier stages of the disease.

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In the past thirty years much study has been given the question of "blood pressure." Many investigations have been conducted in the field of high blood pressure. Instruments for detecting signs of hypertension have be-

come the part of the physician's equipment. Here and there in medical literature of this period, outstanding contributions have been made to this subject. Probably Sir William Osler's discussion, supplemented by Sir Clifford Allbutt, forms the basis for a general consideration of the arteriosclerosis. Classifications and etiologic factors have engaged widespread attention at the hands of medical writers. Public discussions by the laymen have become commonplace. So-called high blood pressure patients have discoursed upon the symptoms and its changes. Physicians have been requested to lower high blood pressure and to increase low blood pressure. Patients have become apprehensive over the situation. The time has arrived for the medical practitioner to bring an understanding of such symptoms to the best advantage of the patient suffering with signs of incipient cerebral arteriosclerosis.

Mosenthal* has planned a suggestive series of questions for such cases. Varied are the symptoms and their onset, but a careful inquiry into the symptoms and the history of each case is extremely important. Satisfactory therapy often depends on knowledge gained in history taking. Heredity is an important phase of the subject. The story of the cause of death in parents and grandparents and the state of health of brothers and sisters must be most painstakingly brought out. Personal history next requires scrutiny. Frank and discriminating investigation must be made into the personal habits of the individual through the immediate past and early life: habits of alcohol, tea, coffee, coca cola drinking; habits of eating; the use of tobacco and drugs; the hours and nature of work; the occupation; the venereal history; the history of infections and operations. Then the patient must be questioned closely about the first symptom, its date and character. The date of the "feeling" of high blood pressure, if such was felt, should be obtained. Are there cardiac symptoms felt? These must be tactfully elicited, if possible. Is there palpitation, pains across the chest, dyspnea, or cough? Is there edema? Has the vision changed? Are there nervous symptoms? Dizziness, emotional crises, headache, loss of memory, sleeplessness, and tinnitus should be brought out, if possible. Hemorrhages from the nose, stomach or kidney should be inquired into. Pains in the legs, ulcers of the extremities, and other symptoms of discomfort in the legs are important. A loss of weight and any unusual fatigue should be brought out in the questioning of such patients. The digestive tract should not be omitted. Often one may find important facts here. Symptoms in the nervous system offer opportunity for a direct understanding of the case. Lesions of cerebral arteries set up various symptoms resembling functional nervous disorders. Depression, restlessness, and headache are significant symptoms but neither of them may be present. In fact, few cerebral signs may presage cerebral hemorrhage. The eye grounds may give one the hint and ophthalmoscopic examination may reveal a twinge of the arteriosclerotic cerebral changes. "Out of the blue" as it were, serious and ominous symptoms of cerebral arterial disease may appear.

However, enough significant symptoms may be read into the clinical picture if one keeps ever alert to the trend of pathologic changes possible in persistent hypertension. Unless the practitioner translates in a mental picture the significance of such symptoms, little chance is given the patient to forefend and delay the ever increasing sclerotic change in the arterial system of the brain.

In no field of medicine, outside of the general infectious diseases, is there to be today, in these days of strain and depression, a larger opportunity in preventive medicine. This sort of prevention, however, is the sort that prevents the eventuality of a dreadful cerebral accident that may take one away before his time or worse consign him or her to years of invalidism, characterized by paralysis and brain disease.

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One should recall essentials of the arterial blood supply of the brain: that four large arteries pass to the brain. There are two internal carotids from the common carotid and two vertebrals from the subclavian. A large anastomosis between the corresponding arteries of the two sides as well as the internal and vertebral of the same side is made at the base of the brain. From this rich vessel arrangement the brain receives the arterial blood supply. As Osler notes, a majority of the cases of hemorrhage is from the central branches. those given off by the middle cerebral arteries. One of the largest of these branches, observes Osler, passes to the third division of the lenticular nucleus and to the anterior part of the

*Oxford Monographs on Diagnosis and Treatment. Vol. vii. Variations in Blood Pressure and Nephritis. Mosenthal.

internal capsule. This is the lenticulo-striate, frequently called the artery of hemorrhage, and it is the one frequently involved in hemorrhage. There may be, however, miliary aneurisms. These may rupture and cause hemorrhage in various locations and amounts. There may be an aneurism of the larger vessels at the branches of the Circle of Willis. There may be a cerebral vessel endarteritis ultimately terminating in apoplexy. Intracerebral hemorrhage may be small and limited to the lenticular body, the thalamus, and the internal capsule. Hemorrhage, notes Osler, into the cerebellum is not uncommon and usually comes from the superior cerebellar artery. It is important to recall that extravasation may be limited to the substance or it may rupture into the fourth ventricle.

Ventricular hemorrhage, says Osler, is almost always caused by rupture of a vessel near the caudate nucleus. The blood may be found in one ventricle only but more often it is found in both lateral ventricles. It may pass into the third ventricle and on through the aqueduct of Sylvius to the fourth ventricle.

Multiple hemorrhages are noted by Osler as occurring most frequently into the basal ganglia and into the pons. From such possibilities of brain hemorrhage subsequent changes occur that are inflammatory or degenerative.

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Diagnosis of cerebral hemorrhage calls for brief comment. As Osler pointed out, the cases in which the onset is gradual are readily recognized although there may be some question whether there is hemorrhage or thrombosis. In cases of sudden apoplectic stroke the unconscious patient with hemiplegia leads to the diagnosis of cerebral hemorrhage. Although embolism, thrombosis and hemorrhage may be confused even here. Then there may be large hemorrhage evoking complete unconsciousness and relaxation. In such a picture one may think of coma of uremia, diabetes, alcoholism or drug poisoning.

As above noted to prevent the culmination of cerebral vascular disease into a situation of hemorrhage or thrombosis must be the purpose of preventive medicine. This can be only partly brought about by the interpretation of symptoms and signs that are elicited by examination in the rather early stage of the process. Blood pressure testing comes in for a very important part in the matter of early diagnosis. Physicians may wisely make blood pressure readings with discrimination and understanding. Consultation and complete physical examination of every patient with persistent hypertension is not too much to do. Many of these cases, if thoroughly examined for exciting etiologic factors and their removal effected, will improve and take a more gradual course toward termination. Hospitalization of these hypertensive patients for a definite period is often indicated. While under the regulatory management of the hospital, important measures may be inaugurated that may bring the patient to a far safer condition. Focal infections may be removed; dietary prescriptions may be given and followed; rest in bed and hot packs may be given; sedative and vaso-dilating drugs may be carefully watched and supervised; isolation may further help in placing the patient in a position of less hazard. Of course, proper tact and caution should be observed by the physician in all such matters. The tactless consignment of hypertensive patients to the "fear of an apoplectic stroke" is both cruel and harmful. Intelligent instruction of the patient as to the nature, course, and outcome of high blood pressure and the fair statement of the hopes entertained for improvement under reasonable efforts of treatment provide more favorable conditions for retarding the progressive tendency of arteriosclerotic changes.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Eleventh Post-Graduate Clinic at University of Virginia Hospital.**

Forty-eight physicians, some of them from distant points within the State like Clintwood and Colonial Beach, attended the regular spring clinic at the University Hospital on May 4th and 5th. On the first day the subjects presented were "Digitalis Therapy," by Dr. J. Edwin Wood; "Surgical Treatment of Tuberculosis," by Dr. E. C. Drash; "Diagno-

sis of Respiratory Affections," by Dr. L. T. Royster; and "Vitamins," by Dr. Alfred Chanutin. The feature of the second day was a continuous session on malignant tumors, with Drs. E. P. Lehman, T. J. Williams, J. H. Neff, F. D. Woodward, W. H. Goodwin and V. W. Archer contributing to the symposium.

The physicians registered for the clinic are listed below:

*Arrington*—Dr. F. M. Horsley
Dr. B. F. Randolph
*Batesville*—Dr. R. L. Page
*Bridgewater*—Dr. J. D. Miller
*Broadway*—Dr. C. E. Watson
*Buena Vista*—Dr. F. L. Thurman
*Catawba Sanatorium*—Dr. W. J. Ozlin
*Chatham*—Dr. C. D. Bennett
*Charlottesville*—Dr. J. C. Coulter
Dr. Anita Lotti
Dr. J. O. Mundy
Dr. Dan O. Nichols
*Clintwood*—Dr. R. L. Phipps
*Colonial Beach*—Dr. Edwin F. Gouldman
*Culpeper*—Dr. H. T. Chelf
*Farmville*—Dr. Thomas G. Hardy
Dr. Dwight Rivers
Dr. J. H. Smith
*Fishersville*—Dr. H Fitzhugh White
*Forest*—Dr. B. A. Rice
*Fredericksburg*—Dr. John E. Cole
Dr. J. Minor Holloway
*Free Union*—Dr. W. A. Kyger
*Gordonsville*—Dr. W. H. Turner, Jr.
*Harrisonburg*—Dr. N. M. Canter
*Hot Springs*—Dr. Ira T. Hornbarger
Dr. M. B. Jarman
*Kansas City*—Dr. M. E. Scott
*Louisa*—Dr. H. S. Daniel
Dr. H. W. Porter
*Locust Grove*—Dr. R. G. Bledsoe
*Lynchburg*—Dr. H. H Hurt
Dr. S. E. Oglesby
*Milwaukee*—Dr. W. B. Hill
*Orange*—Dr. Grant R. Elliott
Dr. Lewis Holladay
*Petersburg*—Dr. F. J. Wright
*Raphine*—Dr. R. F. Kennan
*Scottsville*—Dr. Percy Harris
*Shenandoah*—Dr. B. C. Shuler
Dr. J. J. Waff
*Stanardsville*—Dr. E D. Davis
*Staunton*—Dr. W. A. Murphy
Dr. A. F. Robertson
*Tye River*—Dr. J. F. Thaxton
*Victoria*—Dr. E. L. Kendig
*Waynesboro*—Dr. J. F. Hubbard
Dr. B. K. Weems

**Seventy-Nine Physicians Enroll in Post-Graduate Courses in Southwest.**

A new circuit of post-graduate classes in prenatal and postnatal care organized by the Joint Committee on Prenatal and Postnatal Instruction opened the first of May with centers in Fremont, Norton, Stonega and Pennington Gap. Thirty-one physicians are enrolled in the four groups, and eight to ten additional members are expected from the several visitors in attendance. Besides alert interest in the work as indicated by good attendance, preparation of patients for demonstration, and many calls on the Field Clinician, Dr. M. E. Lapham, for out-of-class conferences and consultations, there are other signs warranting expectation of the same effective study accomplished in the previous twenty-two classes. The enrollment of eleven in Pennington Gap is an especially significant triumph over various hindrances, and a particularly creditable showing for the local committee and the Lee County physicians. In the Stonega group ten members had attended all three meetings at the time of writing, while the seven active participants at Fremont had had only three absences among them. Physicians from Kentucky invited by their Virginia colleagues have attended the meetings in Norton, Stonega and Big Stone Gap.

Originally this fifth circuit included a center at Gate City, for which three physicians enrolled in advance. Not more than one or two additional members could be expected after two Scott County physicians chose a more convenient group in another county. The Joint Committee agreed to conduct the course for four or five members, because the county was too large to be ignored and attendance elsewhere was difficult. Apparently because there was prospect in the beginning for only a small group, the local committee for a time thought it best to give up the class. However, new interest has appeared in nearby Kingsport, and there is present promise of a belated but effective organization at that point.

To make up the quota of five classes per circuit, Dr. J. P. Williams, of Richlands, has proposed the organization of a sixth group at Richlands for the sixth circuit beginning in July. With five physicians at the center and two nearer that point than Tazewell and four in Buchanan County more accessible to Richlands than any other class, the prospects for this additional organization are good. Dr. Lapham has consented to conduct two classes one day of the week during the next circuit, and the Joint Committee will try to establish the course at Richlands.

Details of enrollments as now determined for the fifth and sixth circuits follow:

Fifth Circuit

Fremont—Additional enrollments: Drs. M. M. Fields, L. C. McNeer, George C. Snead.

Total enrollments, 5. Visitors: Drs. J. C. and T. C. Sutherland.

Norton—Total enrollments, 7. Visitors: Drs. J. G. Bentley, J. A. McGuire, T. S. Ussery.

Stonega—Additional enrollments: Drs. S. P. Gardner, F. E. Handy, B. C. Henson, A. W. Lowman, R. P. Stock. Total enrollments, 8. Visitors: Drs. D. C. Keister, C. R. Petty, L. E. Peyton, R. H. Rowe.

Sixth Circuit

Tazewell, Mondays beginning July 10th—Additional enrollments: Drs. Andrew D. Parson, O. K. Phlegar, J. W. Witten, J. P. Williams. Total enrollments, 10.

Lebanon, Tuesdays beginning July 11th—Total enrollments, 5.

Bristol, Wednesdays beginning July 12th—Additional enrollments: Drs. Aaron Cole, R. D. Hallowell, E. D. Rollins, L. B. Snapp, P. D. Stout. Total enrollments, 14.

Abingdon, Thursdays beginning July 13th—Additional enrollments: Drs. C. M. Clendenen, Boyd E. P. Dickerson, E. E. Epperson, S. H. Yokeley. Total enrollments, 11.

Marion, Fridays beginning July 14th—Additional enrollments: Drs. Charles H. Baker, D. C. Boatwright, A. B. Graybeal, William O. Neal. Total enrollments, 8.

**Maternity Center Association.**

The Medical Society of Virginia was represented, by invitation of this Association, at its Third Annual Mother's Day Luncheon on Friday, May 12th, in the Grand Ball Room of the Waldorf-Astoria, New York City, at which there were present more than one thousand guests.

The subject discussed was "Preventable Maternal Deaths," and the speakers were Mrs. Franklin D. Roosevelt, Miss Frances Perkins, Secretary of Labor, Dr. W. W. Chipman, Royal Victoria Hospital, Montreal, Canada, and Dr. J. Allison Hodges, who was requested to outline briefly the educational work and especially the Prenatal and Postnatal courses now being conducted by our State Medical Society.

By request, we present in part his address on that occasion, as follows:

**Post-Graduate Medical Education in Virginia**

As the representative of the Medical Society of Virginia, it is my pleasure to express its appreciation to you for the courtesy extended on this occasion, and also, to congratulate your Association upon its great scientific and humanitarian work in solving the problem of "Preventable Maternal Deaths."

I feel assured that, in this work, you have labored from a high resolve, born of conscientious convictions of duty, and yet I believe you have "builded better than you knew," for I am wondering if you actually realize and appreciate the full significance of what you have done, and are doing for suffering humanity, and for the future of our changing civilization.

The statistical record of your work, taken not from the files of standard and grade A hospitals and laboratories, but from the actual homes of living people under usual, and sometimes unusual living conditions, is one of which you may well be proud, and also one which, because of its abundance of a vital love for sick and suffering women and children, has overflowed your own Maternity Center, and poured its stimulating tide of inspiration into other hearts and lives, not only in this great city, but distant and far-removed.

As a recipient of this surplusage of vitality of love and effort, I am here today to acknowledge my personal indebtedness and that of our Medical Society for your initial and inspirational work. Like you, we have endeavored to meet actually existing conditions, and "match circumstance" with science, but I believe that we have probably gone one step farther, and I trust wisely, in placing the responsibility for our intensive work upon the hearts and consciences of the unified and cooperating medical profession of our State.

Dr. Chipman has just told us how Canada is meeting the necessities in that country in a practical and educational way by making the hospitals, as it were, the center of the solar system, and the treatment stations, the planets; we believe, however, that our system is even superior to this, for to carry out the figure of speech, we make our State Medical Society the center of our system, and each member-practitioner a planet of individual illumination.

In 1929, the Medical Society of Virginia enlarged its scientific and cultural activities by establishing an Educational Agency, known as the Department of Clinical Education. The set-up for this Department was formed by an affiliation from the Society's membership, as represented by the State Medical Society, the two medical institutions in the State and the

State Department of Health, with the President-elect of the Society, annually, as its Chairman. The basic purpose in the formation and development of this personal plan of Post-Graduate Education by coordination and cooperation of medical effort, was to secure individual benefits for practicing physicians and their patients in their own home-communities, and thus, by contributing a continuing program of education, aid them locally by keeping them constantly in thought and practice with all the advancements of modern medicine, and, we believe that this Educational Department has aroused new enthusiasms and energized flagging aspirations in our profession. To accomplish this, lectures, conferences, clinical meetings, etc., have been held at frequent intervals all over the State for three years now, and the Medical Colleges, as well as the physicians have, on request, given freely of their time and skill in advancing this personal home-plan of up-to-date professional betterment and local medical progress. Thirty-four county medical societies have unanimously endorsed the courses; a monthly medical journal and a travel medical library have also been of great contributing value, and the State Medical Society provides a special budget of five hundred dollars ($500.00), annually for this Department, in addition to its annual contribution of twenty-five hundred dollars ($2,500.00) to the Joint Committee on Prenatal and Postnatal Instruction, one of its subsidiaries.

The policies of this Educational Department have been broad and liberal—never bureaucratic nor dictatorial, nor dogmatic, but of necessity, evolutionary and flexible, for, year by year, social conditions change, and year by year, science recreates medicine, and knowledge grows apace. In this way, this new local application of post-graduate medical education has been developed so successfully, carrying, as it does, personally its "Message to Garcia," that the entire profession of our State is practically unanimous in its support, and eagerly enthusiastic for its continuance.

A recent outgrowth of this Educational Department, two years later, in 1931, made necessary by the necessities and demands of medical, as well as social conditions, has been the establishment by the State Medical Society, of a Joint Committee on Prenatal and Postnatal Instruction, including instruction in the latest methods of obstetrical practice.

This subsidiary body to the Department of Clinical Education, is conducted jointly by the Medical Society and the two Medical Colleges in the State, in cooperation with the Department of Clinical Education, and, under their coordinate direction, conducts an instructional program in this specific branch of medicine under an all-time special field clinical instructor who has visited, or will visit, every section of the State according to a regularly prescribed schedule. The State is divided into districts or circuits, containing several counties, and the strategic points in each special district are visited upon successive week-days in rotation until all local physicians, so desiring, are given an opportunity to cooperate in this work of clinical instruction and professional conference. Four circuits in different sections of the State have just been completed and the fifth, embracing a tier of counties along the western border, touching upon the border counties of Tennessee and Kentucky is now beginning.

Up to date, four hundred and fifty-six enrolled physicians and visitors have attended twenty-two classes, and their attendance has averaged higher than 75 per cent. In scores of written comments upon the courses, in reply to inquiries by the Executive Secretary, only six physicians have written that this clinical instruction was not beneficial to them.

Two separate classes for Negro physicians in different cities in the State, upon their individual requests, have likewise been held, and a third applied for, and the interest manifested has been most encouraging, and would apparently indicate, at least in this old Commonwealth, that there is no scientific race prejudice, especially between the professions in the practice of medicine.

This special work of Prenatal and Postnatal Instruction with special teaching in obstetrics, under the sponsorship of the Department of Clinical Education, is now beginning its second year, and has been made possible by an annual appropriation of twenty-five hundred dollars ($2,500.00) by the Medical Society of Virginia and a generous grant of fifteen thousand dollars ($15,000.00), for the first two years from the Commonwealth Fund of New York. The physicians enrolling for these courses pay, also, a minimum enrollment fee of five dollars per student for the course, last year slightly over fifteen hundred dollars ($1,500.00) having been realized from this source.

The University of Virginia Extension Division, as the executive agency for the Joint Committee, is charged with the responsibility of organizing and administering the classes under the definite requirement that a class is to be formed in a community only after the projected meeting has been endorsed by the local profession.

Our Society, and its educational agency, through which this Joint Committee, and other similar subjects, in the future, such as Infant Health and Care, for which there is already a demand, are to be taught, recognize that this is a long-time educational undertaking, but are determined that the best ideals of continuing Post-Graduate Medical Education shall be upheld in Virginia until every practitioner within our borders shall have had the opportunity to make them his own, not entirely for his own personal benefit but, as well, for the good of the public, and the honor of the profession.

And now, in case you may think I have spoken rather extravagantly of our hopes and accomplishments, or perhaps, that I am just another Virginian seeking, or at least claiming, another "priority," I am delighted to report that this educational work of our Society has been validated by an outside source, the Commonwealth Fund, in a recent letter from Miss Barbara S. Quin, Assistant Director of the Fund, to Dr. Lee E. Sutton, Jr., Chairman of the Joint Committee, as follows:

"Everyone was exceedingly gratified at the excellent results of the first year's work, and we most sincerely hope that the second year will be equally encouraging, as we haven't the slightest doubt it will."

As yet, we can bring you no follow-up statistics to prove the value of our work; in fact, we bring you no new principles of either theory or practice, but only a new, and we believe, a more satisfactory and successful method of application of the best theories and methods, both old and new.

In brief, we bring a medical plan controlled and carried out by medical men, from beginning to end, and we dare to hope that the Old Dominion, through its medical profession, has laid the foundations for the creation of another notable tradition, in its belief and practice that the public and our profession alike, and as a whole, have a common obligation and a new duty to mother and child, and

Now, in this dual spirit of professional comradeship and mutual scientific endeavor, we pledge with you to "Make Motherhood Safe for Mothers."

We realize in medical matters, just as in our present economic life, that we are entering upon an era of constructive changes, and in facing it, the apparent and appalling needs of motherhood must be studied and met. We have no illusions as to the future; we are neither intoxicated with inordinate hopes, nor paralyzed with doubting fears, but we do believe that we are at last rightly aroused, and must achieve, for in the awakened convictions of this day, science and civilization alike, demand the performance of our inherited and personal obligations to the profession and to humanity.

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George W. Eutsler,
*Secretary of the Department and of the Joint Committee.*

# Proceedings of Societies

### The Augusta County Medical Association

Held its regular quarterly meeting in Staunton, on May 3rd. There was a good attendance. Dr. W. W. Waddell, University, Va., by invitation, presented a paper on the Treatment of Diarrhoea in Children, and Dr. H. B. Mulholland, also of University, presented a paper on Heart Conditions Especially for the General Practitioner.

### The Roanoke Academy of Medicine

Held its regular meeting on May 1st, at the Elks Club. Dr. Fred Hamlin was in charge of the program, which was as follows:

Contact Glasses—Dr. Charles A. Young.
Endometriosis—Dr. Alfred P. Jones.
A Review of the Present Treatment of the Anemias—Dr. Blanton P. Seward.
Allergy as a Problem of General Practice—Dr. Warren T. Vaughan, of Richmond.

# News Notes

**Committee of Arrangements for our Lynchburg Meeting.**

As previously stated, the Medical Society of Virginia is to hold its 1933 meeting in Lynchburg, October 24th, 25th and 26th. Dr. D. P. Scott has been appointed to serve as General Chairman, with the following committees:

*Publicity*—Dr. E. F. Younger
*Entertainment*—Dr. F. O. Plunkett
*Clinics*—Dr. Ernest G. Scott
*Commercial Exhibits*—Dr. H. B. Spencer
*Scientific Exhibits*—Dr. Don P. Peters
*Hotels and Meeting Places*—Dr. J. R. Gorman.
*Reception*—Dr. Elisha Barksdale
*Ladies*—Mrs. Geo. J. Tompkins

This is going to be an excellent meeting and members are urged to attend. Be sure to count this time as part of your 1933 vacation.

**The Milwaukee Session of the American Medical Association.**

The Milwaukee meeting of the A. M. A., June 12th-16th, will be extraordinary in many ways. In view of the reduced railroad rates, this should also be a fine opportunity for physicians to attend the Century of Progress Exposition in Chicago, as well as the Milwaukee meeting. The meeting promises a most excellent scientific program, clinics, exhibits, entertainments, etc. Dr. E. H. Cary, of Dallas, Texas, is President of the A. M. A.

**The American Medical Golfing Association,**

Headed this year by Dr. John Welsh Croskey, of Philadelphia, will hold its Nineteenth Annual Tournament over the Blue Mound Country Club course, Milwaukee, on Monday, June 12th.

Play will begin at 8:00 A. M., with all teeing off before 3:30 P. M. Dinner will be served at the Club at 6:30 P. M., followed by distribution of approximately fifty trophies and prizes for the eight major events, covering both 36-hole and 18-hole play. Past President Frank A. Kelly, of Detroit, will be on hand with his inimitable stories. In addition, the local committee promises that, at this tournament, Milwaukee's "fame" will not be lessened in quality or quantity.

Any male Fellow of the American Medical Association, in good standing, is eligible for membership in the American Medical Golfing Association, on acceptance of its By-Laws and payment of the enrollment fee. All communications concerning the golf tournament or enrollment can be addressed to Wm. J. Burns, Executive Secretary, 4421 Woodward Ave., Detroit.

**A Welcome Awaits Doctors and Their Families at the Chicago Exposition.**

At the Century of Progress Exposition in Chicago, this summer, the Chicago Medical Society will have a booth in the Hall of Science Building in Group K. A committee from that Society, composed of Drs. Hugh N. MacKechnie, Wilbur Post and Julius Hess, ask us to announce that in their booth they will have information for the visiting physicians and will be glad to assist any members from our State Society in every way possible. The Woman's Auxiliary of the Chicago Medical Society will welcome the wives and daughters of physicians.

The committee states that they hope to have the pleasure of meeting a large number of physicians from our State and of being of some help to them.

**News from University of Virginia, Department of Medicine,**

Dr. Ronald T. Grant, of the Department of Clinical Research, University College Hospital Medical School, London, visited the Medical School on April 22nd and 23rd.

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On May 1st, Major Edgar Erskine Hume, Librarian of the Surgeon Generals Library, Washington, spoke before the University Medical Society on the History of Typhus Fever with particular reference to the Serbian epidemic.

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The eleventh post-graduate clinic was held at the University of Virginia Hospital on May 4th and 5th. Fifty physicians were in attendance.

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On May 1st, Dean J. C. Flippin spoke before the Lynchburg Medical Society on the subject of Hyperinsulinism and Allied Conditions.

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Dr. J. Edwin Wood read a paper on Rheumatic Fever in Virginia (prepared in collaboration with Dr. A. D. Hart) before the

American Climatological and Clinical Society at the meeting in Washington on May 10th.

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On May 12th, Dr. Arthur Steindler, Professor of Orthopedic Surgery at the University of Iowa, gave two lectures before the faculty and students; at 10:30 he spoke on the subject of The Upper Extremities, at 8:00 on Back Pain.

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Finals of the University will be held on June 10th to 13th. The usual entertainments and exercises will enliven these days.

**News from Medical College of Virginia.**

Dr. Walter Straub, Professor of Pharmacology of the University of Munich, was a recent guest of Dr. Harvey B. Haag, Associate Professor of Pharmacology. Doctor Haag worked in the laboratory of Dr. Straub in Munich several years ago.

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Dr. William Pepper, Dean of the University of Pennsylvania Medical School, was a visitor for several hours on April 24th.

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Recent visiting alumni were Dr. Jesse McCall, '31; Dr. O. F. Hedley, '28; Dr. L. L. Putney, '14, and Captain L. H. Ginn, '27.

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President W. T. Sanger and Mr. J. R. McCauley, Secretary, were in Danville and Lynchburg, May 4th and 5th, for meetings with the alumni of these two places. Both meetings were well attended and plans were made for similar meetings next year.

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The outpatient department for the month of April shows a total of 5,716 patient visits. The average number of patients per day was 253.

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Quite a number of faculty members attended the eleventh annual meeting of the Virginia Academy of Science, at Fredericksburg, May 5th and 6th. Those on the program at this meeting were: Dr. J. C. Forbes, Dr. W. A. Peabody, Dr. R. J. Main, Dr. H. B. Haag, Mr. M. K. Underwood, Dr. Sidney S. Negus, Dr. Beverley R. Tucker, Dr. Frank L. Apperly, Dr. W. R. Bond, Dr. Fred J. Wampler and Dr. Frederick W. Shaw.

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The annual commencement exercises of the Saint Philip Hospital School of Nursing were held May 14th and 15. Dr. Arthur D. Wright, President of the John F. Slater Fund, Washington, D. C., made the commencement address to the twenty-one graduates.

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Dr. J. C. Forbes, Associate Professor of Chemistry, has been named an honorary editor of the *Journal of Dental Research*. This is in recognition of Dr. Forbes' research in this field.

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The fourth annual Stuart McGuire lectures, held in Richmond, the latter part of April, were well attended by a number of out-of-town doctors as well as local physicians and students. Dr. Ronald T. Grant, of the Department of Clinical Research of the University College Hospital, London, England, and associated with Sir Thomas Lewis, the noted cardiologist, gave three lectures, and exceedingly interesting clinics were held by Dr. Paul White, of Harvard University, Dr. Louis Hamman, of Johns Hopkins, and Dr. Tinsley Harrison, of Vanderbilt University.

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As the MONTHLY goes in the mail, the commencement exercises of the College are in progress. A notice of these will appear in our next issue.

**News Notes from Duke University School of Medicine and Duke Hospital.**

On April 8th Dr. Charles R. Stockard, Professor of Anatomy, Cornell University, gave a lecture at the Duke Hospital on the "Peculiar Form and Type in Man and Animals."

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On May 3rd Dr. Otto H. F. Vollbehr, well-known bibliophile, lectured on old and rare books.

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On May 15th Dr. Arthur Steindler, Professor of Orthopedics, University of Iowa, gave a clinic on "The Low Back."

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On May 12th the Durham-Orange County Medical Society held its meeting at the Duke Hospital, at which papers were presented by the Duke Hospital staff on Gastro-Intestinal Diseases—Surgical and Medical Aspects.

**Dr. Charles A. Young,**

Roanoke, Va., sailed from New York on May 19th to attend the European Assemblies of the Inter-State Post-Graduate Medical Association of North America. The group

expected to attend clinics in London, Edinburgh, Oslo, Copenhagen, Stockholm, Leningrad, Moscow, Warsaw, Berlin, Vienna, and Paris, and will return on July 18th.

**The American Proctologic Society**

Will hold its annual meeting in Chicago, June 12th-13th, with headquarters at the Stevens Hotel. Interesting papers have been prepared for the scientific program. Dr. Curtice Rosser, of Dallas, Texas, is President of this Society.

Further information may be obtained from the Secretary, Dr. Frank G. Runyeon, 1361 Perkiomen Ave., Reading, Pa.

Dr. E. H. Terrell, Richmond, Va., an ex-president of the Society, will attend this meeting.

**Married.**

Dr. Wilmer Howard Paine, Jr., Charlottesville, Va., and Miss Mildred Goadby Black, Lynchburg, Va., April 22nd. Dr. Paine is an alumnus of the class of '30, University of Virginia.

Dr. Sigmund Newman, Vienna, Va., and Miss Rita Lessner, Richmond, Va., May 14th. Dr. Newman graduated from the Medical College of Virginia in '30.

**Dr. William G. Stephenson,**

Of the class of '30, Medical College of Virginia, has received an appointment to continue his service another year as resident physician at the Baroness Erlanger Hospital, Chattanooga, Tenn.

**Doctors' Helpers Institutes to be Held During Summer.**

The State Health Department, during the summer, will conduct Doctors' Helpers Institutes at the following places:

*For white women:*

Virginia Polytechnic Institute, Blacksburg, June 19-23, 1933.

Health Center, Petersburg, July 17-21, 1933.

Medical Building, University of Virginia, Charlottesville, July 24-28, 1933.

*For negro women:*

Christiansburg Institute, Cambria, June 26-30, 1933.

Tidewater Institute, Chesapeake, July 10-14, 1933.

Virginia State College for Negroes, Petersburg, July 31-August 4, 1933.

Hampton Institute, Hampton, August 7-11, 1933.

These Institutes are conducted annually in order to provide training for intelligent women with some education who wish to become practical nurses, or act in a general way as doctors' helpers.

The lectures and demonstrations given by the members of the State Health Department, and by physicians and nurses connected with the institutions, afford a valuable opportunity to those taking the course.

Each year physicians have sent a number of women to the Institutes in order to have more competent helpers in caring for the sick in their communities.

If any physician knows of women who would be benefited by this course, the State Department of Health would appreciate his sending their names to Mrs. Emily W. Bennett, R. N., State Department of Health, Richmond, Va., who will send them detailed information as to expense, etc.

**Dr. Rudolph C. Thomason**

Will open offices in the Professional Building, Richmond, Va., July 1st, for the practice of Ophthalmology. He is an alumnus of the Medical College of Virginia, class of '29, and served an internship at Memorial Hospital. Dr. Thomason has been studying in the Department of Ophthalmology at the University of Chicago Clinic.

**Richmond Committee for Southern Medical Association.**

Dr. Carrington Williams, president of the Richmond Academy of Medicine, at a recent meeting, announced the following appointments of chairmen for the Southern Medical Association meeting in November:

*General Chairman*—Dr. Fred M. Hodges.
*Honorary Vice-General Chairmen*—Dr. Stuart McGuire, Dr. J. Shelton Horsley, Dr. J. K. Hall.
*Finance*—Dr. W. H. Higgins.
*Entertainment*—Dr. Beverley R. Tucker.
*Program or Clinics*—Dr. I. A. Bigger.
*Meeting Places*—Dr. R. Finley Gayle, Jr.
*Hotels*—Dr. J. Powell Williams.
*Publicity*—Dr. Jos. F. Geisinger.
*Scientific Exhibits*—Dr. W. Ambrose McGee.
*Technical Exhibits*—Dr. J. B. Dalton.
*Alumni Reunions and Fraternity Luncheons*—Dr. H. H. Ware, Jr.
*Membership*—Dr. C. M. Caravati.
*Information*—Dr. John S. Horsley, Jr.
*Transportation*—Dr. Arthur S. Brinkley.
*Signs and Badges*—Dr. Garland Harwood.
*Lanterns*—Dr. J. L. Tabb.
*Golf*—Dr. Paul W. Howle.
*Trap Shooting*—Dr. W. B. Porter.
*Women Physicians*—Dr. Pauline Williams.
*Ladies' Entertainment*—Mrs. Stuart McGuire, *Chairman*, Mrs. J. B. Dalton, *Vice-Chairman*.

**Dr. Robert Whitehead**

Announces the removal of his office from 17 East Grace Street to 5 East Franklin Street, Richmond, Va.

**"Sight-Saving" Classes.**

The National Society for the Prevention of Blindness announces that, to prepare teachers and supervisors for this work, training courses will be offered during the summer of 1933 at Western Reserve University, Cleveland, O., June 19th-July 28th; University College, University of Chicago, Chicago, Ill., June 26th-August 1st; Teachers College, Columbia University, New York City, July 10th-August 18th.

A course will probably be offered also at State Teachers College, Buffalo, N. Y.

Information concerning these courses may be secured from the respective universities or from the National Society for the Prevention of Blindness, 450 Seventh Avenue, New York City.

**Appointments at the New York Polyclinic Medical School and Hospital.**

The following appointments have been announced by the New York Polyclinic Medical School and Hospital:

Dr. Russell L. Cecil, as Professor in the Department of Internal Medicine, and Attending Physician; Dr. Foster Kennedy, as Consulting Neurologist; and Dr. Joseph E. J. King, as Clinical Professor in the Department of Neuro-Surgery.

**The South Carolina State Medical Association,**

At its annual meeting held recently, decided to hold its 1934 meeting in Charleston. Dr. Robt. E. Abell, of Chester, was installed as president. Dr. Wm. Egleston, Hartsville, was named president-elect, and Dr. E. A. Hines, Seneca, was re-elected secretary.

**Mental Hygiene Movement Celebrates 25th Anniversary.**

The twenty-fifth anniversary of the founding of the mental hygiene movement was commemorated May 6th, in New Haven, where the movement was founded by Clifford W. Beers. Several prominent speakers were on the program for the morning and evening sessions, among them being Mr. Beers, himself.

**Dr. Hunter H. McGuire,**

Winchester, Va., has been re-elected president of the Winchester Memorial Hospital for the thirty-second consecutive time, having been its president since the institution was established. Dr. J. E. Harris was also re-elected secretary.

**Dr. Shore's Memory Honored.**

The North Carolina State Legislature has ratified a resolution designating the building which houses the State laboratory of hygiene in Raleigh as the Clarence A. Shore State Laboratory of Hygiene Building. This is a memorial to Dr. Shore, who died February 10th, after having served as director of that laboratory for a period of twenty-five years.

**The American Society for the Control of Cancer**

Announces the removal of its offices from 25 West 43rd Street to 1250 Sixth Avenue, Rockefeller Center, New York City.

**Dr. Tom A. Williams,**

Formerly of Washington, D. C., and a member of the Medical Society of Virginia, but more recently located at Miami, Fla., announces that he has spent the winter in Spain and has improved very much in health. He is now visiting his son in London, before returning to this country.

**Dr. Regena Beck,**

Pathologist of the Stuart Circle Hospital, Richmond, Va., will attend the annual meeting of the American Society of Clinical Pathologists at Milwaukee, June 9th-12th, and will read a paper on the Pathogenesis of Neutropenia.

**The Graduate Nurses' Association of Virginia**

Had an excellent meeting in Richmond, the latter part of May, with an attendance of 331 graduate nurses. Miss Blanche Webb, Norfolk, continues as president for another year. Officers elected are: Vice-presidents, Miss Frances Zeigler, Richmond, and Miss Ruth Morton, also of Richmond; secretary, Miss Mary Marshall, Hampton; treasurer, Mrs. Jessie W. Faris, Richmond; new director, Miss Nina Gage, Hampton. The place of meeting for the 1934 session will be selected later.

**The American Congress of Radiology,**

Composed of the American College of Radiology, the American Radium Society, the American Roentgen Ray Society, and the Radiological Society of North America, will

hold a convention in Chicago, September 25th-30th, inclusive. Dr. Henry K. Pancoast, of Philadelphia, President of the Congress, states that all physicians, physicists, biologists and others connected with the allied sciences will be made welcome at the Congress.

Over 150 essayists will devote fifty-five full hours to the scientific program. The daily programs will terminate at 2:00 P. M., leaving the afternoons free to visit the Century of Progress World's Fair.

Information concerning membership in the Congress, railroad and hotel rates, etc., may be secured from Dr. Benjamin H. Orndoff, 2561 N. Clark St., Chicago, Ill.

**For Rent—**

Doctor's office, 1100 block West Franklin Street, Richmond, Va., first floor front. Furnished reception room shared with one other doctor, private consultation room, tiled surgery or treatment room, private lavatory. $45.00 per month includes electricity, heat, water and janitor service. Also suitable for a dentist. In answering, state references and type of practice. Address replies to "V. M. J.," care this journal, 1200 East Clay Street, Richmond.—(*Adv.*)

# Obituary Record

**Dr. Maury B. Linkous,**

A native and life-long resident of Montgomery County, Virginia, died suddenly at his home in Blacksburg, Va., on April 29th, while talking with a patient in his office. He was fifty-nine years of age and graduated in medicine from the former University College of Medicine, Richmond, Va., in 1899. He had been a member of the Medical Society of Virginia for over thirty years, and was also a very active member of the Southwestern Virginia Medical Society. His wife, a young son, and several brothers and sisters survive him.

The following resolutions were passed on the death of Dr. Linkous:

The Southwestern Virginia Medical Society, and the Medical Discussion Group, through a committee appointed by the President of the Society, passed the following resolutions on the death of Dr. Linkous:

WHEREAS, God in his infinite wisdom has seen fit to remove from our midst our beloved friend and co-worker, Dr. Maury B. Linkous, of Blacksburg, Va., on Saturday evening, April 29, 1933,

*Therefore be it resolved.* First, that the medical profession has lost one of its most valuable men, because of the many virtues and good qualifications which were the foundation of his character, and which were manifested in his daily relationship with the medical profession and the patients with whom he came in contact;

Second: That the State of Virginia has lost one of its outstanding physicians and citizens, who for a number of years contributed more than his part to the community and State in which he lived, both as a physician and citizen;

Third: That a copy of these resolutions be spread on the minutes of our Society, a copy sent to the VIRGINIA MEDICAL MONTHLY, and a copy to the family.

A. M. SHOWALTER, *Chairman,*
O. A. WEATHERLY,
C. F. MANGES.

**Dr. Louis A. Thompson,**

Manager of the Veterans' Administration Home, Hampton, Va., died April 14th. He was sixty years of age and a native of Ohio. Dr. Thompson graduated from the Bellevue Hospital Medical College of New York in 1897. While in army service as a Contract Surgeon, during the Philippine Insurrection, he was severely wounded and as a result suffered the loss of a leg. Dr. Thompson entered the National Soldier's Home, at Hampton, Va., as an interne and was promoted to various grades until at the time of his death he was Governor and Manager of the Home. He had been a member of the Medical Society of Virginia for twenty-two years and was also a member of the American Medical Association. His wife and two daughters survive him.

**Dr. Wesley Reid Putney,**

Formerly of Virginia, died suddenly on May 2nd, at Lake City, Fla. He was fifty-five years of age and a graduate of the former University College of Medicine, Richmond, Va., in 1912. He had retired from practice. The interment was in Farmville, Va. His wife and a daughter survive him.

**Dr. George Hooper Mallett,**

Hendersonville, N. C., died March 22nd of heart disease. He was sixty-nine years of age and a graduate of the University of Virginia, Department of Medicine in 1885. He was a fellow of the American College of Surgeons.

**Dr. J. Monroe Klinger,**

Harrisonburg, Va., died March 29th, of heart disease. He was eighty-three years of age and a graduate of the University of Wurzburg, Germany, in 1880.

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## CANCER OF THE COLON AND RECTUM.*

J. SHELTON HORSLEY, M. D., Richmond, Va.

### The Increase in Cancer

The importance of the fight against cancer is becoming more obvious every year. That the mortality rate from cancer is on a steady increase, aside from the allowances that may be made for more accurate diagnosis, is generally conceded. With the prolongation of life which Dublin indicates will continue for about twenty years longer, more and more individuals will be gradually thrust into the "tropic of cancer."

The organs that are chiefly responsible for deaths from cancer are the stomach and intestines. In the Registration Area of the United States in 1929, which is the last year for which we have a complete report of the United States Census Bureau, there were 111,569 deaths from cancer. The Registration Area represents 95.7 per cent of the total population of the United States. Allowing for this 4.3 per cent which are not included in the Registration Area, it will be readily seen that the total deaths from cancer in the United States are upward of 115,000. Of 111,569 deaths from cancer, cancer of the stomach and liver (which are classified together) is responsible for 37,915 deaths. Primary cancer of the liver is very unusual, so that the vast majority of the cancers in this classification are of the stomach. Cancer of the small intestines and colon accounts for 10,958 deaths, and cancer of the rectum and anus accounts for 5,018 deaths.

It will be seen that cancer of the stomach, liver, small intestines and large intestines is responsible for 53,891 deaths from cancer during the year 1929.

Cancer of the small bowel is quite rare, though it occasionally occurs.

The American Society for the Control of Cancer, an organization which is composed of both members of the medical profession and laymen and which is earnestly striving to decrease the death rate from cancer, recognizes only two methods of treating cancer—by radiation either with radium, radium emanations or X-ray, and by surgery. Surgery, of course, includes operations, whether done by a knife, the endotherm or the electric cautery. In some regions of the body radiation is preferable to any other treatment for cancer, as in the lymphosarcomas, or cancer of the uterine cervix. In some other regions a combination of radiation and surgery is best, as in certain malignancies about the mouth or cancer of the breast, while in still other regions surgery alone is the preferable treatment, as in cancer of the stomach and intestines. Occasionally in the rectum the implantation of radon emanations or applications of deep X-ray are helpful, but as a rule cancer of the colon down to the rectum and cancer of the stomach are best treated by surgical extirpation.

### Diagnosis of Cancer of the Colon and Rectum

An important point in all types of cancer is an early diagnosis. Unfortunately this is often difficult, because of the absence of pain in the early stages of cancer. The symptoms of cancer of the colon usually differ somewhat in the right half and the left half of the colon, because of the difference in function of these two segments of the bowel. In the right half of the colon the fluids are largely absorbed, whereas the left half serves chiefly as a reservoir. The line of demarkation of these functions, however, is not sharply drawn, and there may be some adaptation of one function to the other.

One of the first signs or symptoms that attracts attention to the possibility of malignancy of the colon is an irregularity of the habits of the bowel. If the patient whose bowel movements have been habitually regular begins to

*From the Surgical Department of St. Elizabeth's Hospital, Richmond, Va.

Read before the sixty-third annual meeting of the Medical Society of Virginia, at Richmond, Va., November 1-3, 1932.

have stools at unusual times, if there is some tenesmus, and the appearance of mucus and particularly of blood in the bowel movements, which are scanty and at irregular periods, attention should at once be drawn to the possibility of cancer, even if there is no pain. These cases should be examined, first of all digitally in the knee-chest position and then with a proctoscope. A careful digital examination of the rectum will enable a diagnosis to be made in a large majority of cases. This should be supplemented by a proctoscopic examination which will reveal some of the lower sigmoid, a location where a roentgenologic examination is not always satisfactory.

The frequent transition of benign tumors or polyps of the large bowel into cancer has often been noted. A large proportion of cancers of the rectum and lower sigmoid that can be observed by the proctoscope have as their starting point an adenomatous polyp. A solitary ulcer may result in sufficient irritation to initiate a malignant growth. In the right half of the colon cancer is usually large, ulcerating and non-obstructive, certainly until it becomes of sufficient size to be palpated. Occasionally in thin persons with relaxed abdominal wall a tumor can be felt in a comparatively early stage, though usually this does not occur until the disease is well advanced. After the ulcerated area has penetrated into the deeper coats of the bowel, the peritoneum over it becomes irritated and inflamed and pain results. This may be noted at defecation, and as it advances it gives rise to tenderness and muscle spasm. Apparently, however, pain except as it is caused by obstruction and the interference of peristalsis does not appear until the peritoneal coats are involved, at least from the hyperemia. In the right colon, there is a tendency for a malignant growth to become fungus-like, and necrotic and ulcerative, and there is ready bleeding with free absorption of the septic and necrotic products of the cancer. Consequently, a secondary anemia is readily produced by cancer in the right colon. A secondary anemia, or even an anemia that closely resembles a primary anemia, should always call attention to the gastro-intestinal tract, as it is often caused by a benign tumor in the stomach or duodenum, a slowly bleeding ulcer, or by cancer in the right colon. It was thought at one time that cancer in the right colon produced some particular substance that was hemolytic. It has been shown, however, that this is not true, and that the anemia can be readily accounted for by the oozing and by the hemolytic effects of necrotic products from the colon. Obstruction is not common from cancer of the right colon.

In the left half of the colon, the cancer is usually the so-called "napkin-ring" or constricting type, and often causes obstruction. Colicky-like pain may appear at intervals for some time before complete obstruction occurs, or total obstruction may produce the first symptoms. Palpation of the tumor on the left side is not so easily accomplished as on the

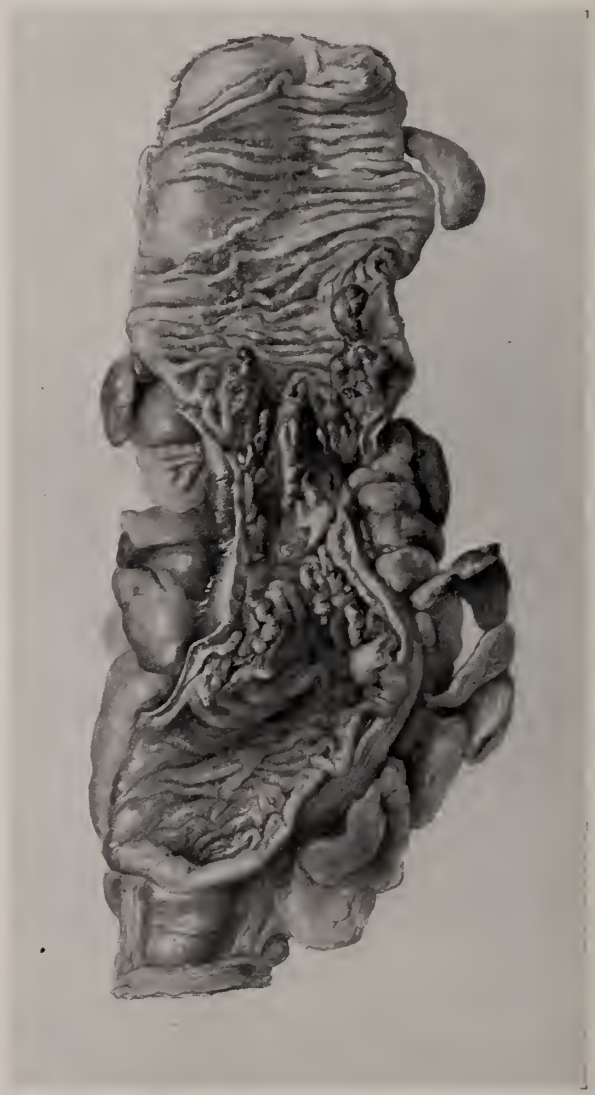

Fig. 1.—Mr. R. M. R. Excision of cancer of the sigmoid with end-to-end union. The patient was operated upon April 1, 1929. There has been no recurrence up to the present. This shows not only constriction but somewhat more abundant papillary-like formation that often occurs in cancer of the left colon.

right side, for the reasons that a tumor in the right colon is more likely to be of the fungous ulcerative type and the redundant loops of sigmoid may obscure the growth. A careful abdominal palpation, however, should always be made, particularly along the line of the colon. (Figs. 1 and 2.)

Roentgenologic examination with a barium enema is valuable in the diagnosis of tumors of the colon, and it is much more helpful in the diagnosis of tumors in the upper sigmoid and the rest of the colon than in the lower sigmoid and the rectum. If the sigmoid is very redundant and if it falls over the lower sigmoid, it may not be possible to show a filling defect.

Fig. 2.—Photomicrograph of specimen shown in Fig. 1. It is an adeno-papillary type of carcinoma, of about grade 2 malignancy. (X 140.)

It must be borne in mind, however, that when an irregularity of the contour of the lumen of the colon can be demonstrated by the X-rays the growth is already fairly well advanced.

The first thing to do when a patient presents the signs of a change in the bowel habits and particularly if there happens to be a little blood in the stools or a passage of blood or mucus between the stools, is to make a general physical examination. This includes laboratory examination for syphilis and a study of the blood along, of course, with the routine examinations of the heart and lungs. Then the abdomen should be carefully palpated with particular attention paid to any unusual prominence in the abdomen and to any mass or tender spot that may be palpated. Next, the rectum is thoroughly examined with the finger, and finally a proctoscopic or sigmoidoscopic examination should be made. If these do not show any definite cause for the complaint, a barium enema is given and careful X-ray examination is made by a competent roentgenologist. Even the best roentgenologist may find difficulty in making a diagnosis of lesions of the lower sigmoid, and if one is tried by one who is incompetent the situation is quite hopeless and such an examination may cause more confusion than if it had been omitted. A barium enema is preferable to examination of the colon after the ingestion of barium through the stomach, because by the latter method the colon is usually not well filled out and is not under the tension that an enema produces. If a barium enema shows no lesion in the colon, then a thorough gastro-intestinal X-ray examination should be made because there might be some defect around the ileo-cecal valve which will show better by the method of oral administration.

Cancers of the colon are among the most satisfactory types of internal cancer to treat. In a report of the Cured Cancer Clinic held at Boston April 5 and 6, 1932, the following are suggestions of the symptoms and methods of investigation:

Suggestive Symptoms:
- (a) Rectal bleeding.
- (b) Any change in bowel habits.
- (c) Intestinal grippe.
- (d) Colitis
- (e) Unexplained secondary anemia.

Methods of Investigation:
- (a) Careful examination of abdomen, pelvis and rectum.
- (b) Proctoscopy.
- (c) Barium enema only after rectal examination and proctoscopy have been done.
- (d) Barium meal only after (a), (b), (c), as above are negative.
- (e) Examination of stools for blood.

### Results of Treatment

Many cases reported at this Boston Clinic were too far advanced to admit of any operation. Of the cases to be operated upon for cancer of the rectum there were 55 per cent of five year cures, and of the colon there were 19 per cent of five year cures.

At the request of the American College of Surgeons, we have reviewed our cases of cancer of the rectum for the years 1924, 1925 and 1926, so that there is an interval since the last operation of more than five and a half years.

The group was not large, but as each patient was traced it seemed to be valuable. There were eleven cases of cancer of the rectum presented for treatment during those three years, and of these three were inoperable and eight were operated upon, with no operative deaths, though in the subsequent three years the operative mortality was about 30 per cent. Of the eight patients operated upon, three have died from recurrence and four are now living and well, five to eight years after operation. One patient died three and a half years after the operation of intestinal obstruction due to adhesions about the cecum, and necropsy showed no recurrence of the cancer. If this case be excluded, we have four cases cured from five to eight years after operation out of seven cases, or 57 per cent of five year cures.

In cancer of the colon, unfortunately, our statistics are not satisfactory because we had no standard operative procedure at that time for cancer of the colon such as we have adopted within the past few years. The method of the so-called antiseptic technic of Kerr, by folding in the tissues with a basting stitch, has proved to be fallacious because the basting stitch practically always becomes to some extent infected and because the bowel has not been biologically prepared for the operation. In somewhat the same general way the biologic preparation of the patient is necessary in exophthalmic goiter, for instance, by giving iodine; or for the urological case by draining the bladder and relieving the pressure on the kidneys before operation is undertaken. Lack of preparation for operation on the colon has caused an unnecessarily high death rate from cancer of the colon.

### Treatment of Cancer of Left and Transverse Colon

For the past four years we have adopted methods of operation for cancer of the colon that seeem to be more satisfactory. If the lesion is in the transverse or left colon or sigmoid, where an anastomosis can be made, the first step of the procedure is a colostomy on the right side. This is accomplished by following the old-fashioned technic of bringing the colon onto the abdominal wall. A muscle-splitting incision as for appendicitis is made. The cecum is recognized and drawn up. If the mesentery of the ascending colon is short, the outer leaf is divided until the ascending colon is readily brought onto the wound. Then a glass rod is passed through the mesentery of the ascending colon and fastened to the abdominal wall with sutures. The bowel is packed around with iodoform gauze. If there is an obstruction, a purse-string suture is applied through a portion of the bowel on the oral side of the rod and a soft rubber catheter with an additional perforation is inserted through the purse-string suture. This drains off the gas and prevents contamination of the wound for a few days. After a few days the wound is opened widely on the proximal side of the glass rod and all of the fecal matter comes through the artificial anus. The distal end of the bowel is irrigated by washing it out with salt solution twice a day. In this way the distal portion of the bowel is given complete rest and the quantity of bacteria is greatly reduced. It converts the distal part of the colon to the same bacteriological condition as the upper part of the small intestine, which can be safely sutured from within. About ten days or two weeks after the establishment of the artificial anus the segment of diseased bowel is removed.

If the patient is fat and the mesentery short, or if the cancer is large and adherent, a modified Mikulicz operation is done. The mesentery of the segment of bowel to be removed is doubly clamped in segments, divided and tied just as though the bowel were to be resected. Each end of the loop to be removed is doubly clamped with Payr clamps and brought onto the abdominal wound. The two limbs of the bowel that are grasped by the clamps are sutured together by parallel lines of sutures in such a way that the large mesenteric vessels will not be included in the apposed portions of the bowel; otherwise, when the spur is later divided the nutrition of the bowel may be affected. The loop of bowel, each end of which has been doubly clamped, is then divided between the clamps with the electric cautery. The wound is partly closed, and iodoform gauze is packed around the margin of the wound. If the cancer has been adherent, and particularly if it has been septic, cigarette drains and tubes are carried down to the stump of the mesentery. These are removed in two or three days, but the clamps on the ends of the bowel are kept in position until at least two days after the drainage has been removed. Occasionally the clamps will cut through before the desired time, but if the enterostomy

is functioning satisfactorily they will usually hold.

When the clamps on the bowel are removed, say in five or six days after the operation, the spur between the two ends of the colon, which was formed by placing parallel lines of sutures, is clamped, preferably with a soft-bladed clamp that comes together at the tip first. This is inserted well down into the bowel on each side and lightly locked. After twenty-four hours it is clamped more firmly, but by lightly locking it at first it is fixed in position and then all of the bowel that is caught within its grasp later on will become necrotic. The clamp should be left on until it comes away of itself, which occurs in three or four days. The ends of the bowel may then be turned in by a simple procedure under local anesthetic, with sutures of catgut, but they should be permitted to heal firmly before the enterostomy is closed. This will take at least two weeks. The enterostomy is closed by first removing the glass rod the day before the operation is to be done, and after thoroughly cleansing the wound the margins of the opening are brought together with catgut sutures in such a manner as to invert the mucosa. This may produce some tension, but it is necessary to invert the mucosa fully. This line of sutures is further buried by another row of interrupted mattress sutures of fine tanned or chromic catgut, the ends of which are left long. The incision around the enterostomy is extended. The peritoneal cavity is opened, and the loop of bowel is thoroughly mobilized. It is sunk into the peritoneal cavity. The long ends of the mattress sutures are threaded in needles and passed through the peritoneum of the upper margin of the wound and tied. This brings the sutured surface snugly in apposition with the parietal peritoneum, and even though there is tension on the sutures the parietal peritoneum quickly seals off the wound. The abdominal wound is closed in layers after the manner of a McBurney incision, but a drain of rubber tissue is carried down to the bowel because these wounds usually suppurate, though it is rare for a fecal fistula to occur. If a fecal fistula does occur it readily closes after several days.

If the growth is of the constricting type and not adherent, an end-to-end anastomosis can be done. When the loop is to be resected, the mesentery should be cut back along its junction with the bowel until a spurting vessel is found. If this is not done, even with the greatest care it will be occasionally found that unconsciously the vessel supplying the portion of bowel to be resected has been occluded. The bowel is cut obliquely, to prevent constriction of its lumen. First of all is applied a row of internal sutures of non-absorbable material—linen or silk—and making an over-hand stitch or lock-stitch uniting the mesenteric third of the bowel. This line of sutures is inserted as far as possible from within. Over this are placed mattress sutures of fine or chromic catgut, and the ends are left long, threaded in a needle and passed through adjacent fat, either omentum or tags of mesentery, and tied, so assuring additional safety. The mesentery is carefully adjusted not only to cover the raw surface but care must be taken also to avoid injuring the vessels that supply the bowel. The blood supply to the colon is normally meager, and injury of a small vessel may cause necrosis and leakage.

### Treatment of Cancer of Right Colon

In the right half of the colon the procedure is quite different, because the function is different. In cancer of the cecum or ascending colon there is no room for the establishment of an enterostomy in the large bowel, and an enterostomy in the ileum is not satisfactory, because, among other reasons, the liquid contents of the bowel would continually contaminate the wound where the resection is to be made later on. The ileum is, therefore, divided four or five inches from its termination, between two clamps, with the electric cautery, each end being thoroughly sterilized. If the operation is to be in two stages, the distal end is buried by a basting stitch. Whether the operation is in two stages depends upon the local conditions. If the mesentery is short or the growth is large and adherent, a two-stage operation should be adopted. If the growth, however, is not adherent or the mesentery is ample, the operation may be done in one stage. If it is a one-stage procedure, there is no occasion for suturing the distal end of the ileum. A small rubber band, No. 32, three inches long and one-eighth inch wide, is placed through the mesentery of the ileum about six to eight inches above the clamp. This is tied three times. (Fig. 3.) The portion of the transverse colon to which the bowel is to be applied is blocked off by the small rubber bands. These rubber bands are superior to soft-bladed clamps; they not only take up less room, but

are more effective and less injurious to the bowel.

The end of the ileum is brought to the side of the loop of transverse colon to which it is to be anastomosed, and fastened by suturing

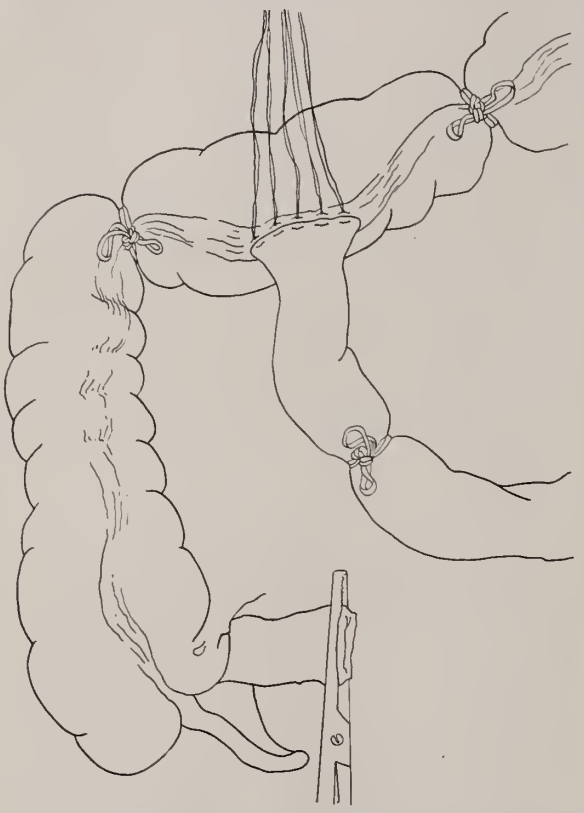

Fig. 3.—The first stage in excision of malignancy of the cecum or ascending colon. The small rubber bands as referred to in the text have been placed on the ileum and also on the colon. The ileum has been doubly clamped near its end and divided with the electric cautery. The stump of the ileum has been cleaned out and sutured end-to-side to the transverse colon. The cecum and ascending colon may be removed at a later stage or, if the growth is small and the mesentery ample, this can be done immediately after the end-to-side anastomosis has been completed.

the under surface of the ileum to the side of the colon near its mesentery with linen or silk sutures. First two stitches are placed as tractor sutures, one on each side of the ileum, uniting it to the colon, and then a continuous mattress suture of the same material makes the union firmer. The site of the anastomosis is well packed off with gauze wet in salt solution. The Payr clamp is removed and the segment of bowel from its stump to the rubber band is thoroughly cleaned with strips of gauze which have been soaked in mercuric iodide solution. An incision is made in the transverse colon, preferably through a band of the colon, and the loop of transverse colon which has been isolated by the two rubber bands is thoroughly cleaned. Beginning on the right side the posterior margin of the stump of the ileum is united to the posterior margin of the wound in the colon with a continuous suture of linen or silk. When the left side is reached, an incision is made in the anterior surface of the ileum to flare it open. The suture is continued anteriorly, preferably from within as far as possible, and tied to its original end. The anterior row of sutures of linen or of silk is then applied, and over this anteriorly and laterally is placed a series of interrupted mattress sutures of fine tanned or chromic catgut. The ends are left long.

If the operation is in one stage, the mesentery of the terminal portion of the ileum, the cecum and ascending colon should have been already divided in segments and tied. All that remains to be done is to clamp doubly the transverse colon near the site of the anastomosis and to divide it with the electric cautery between the clamps. The stump is buried by the basting stitch method, reinforced by a purse-string suture, and over this is brought some adjacent peritoneal covered fat. The long ends of the suture on the end-to-side anastomosis of the ileum to the colon are also carried through peritoneal covered fat to protect it in the same way. If the operation is to be in two stages, the distal stump of the ileum is buried and the cecum and ascending colon are removed about two weeks later.

### Treatment of Cancer of Rectum

In cancer of the rectum there is not the same need of an enterostomy. The operation can usually be done in one stage, by the abdomino-perineal method. Except in unusual cases this is the best procedure. With the continuous intravenous administration of dextrose in Ringer's solution, using spinal anesthesia, this operation can be performed in one stage when formerly it required two or more stages. When the spinal anesthesia is given, the intravenous injection of dextrose and Ringer's solution should be started, preferably through an intravenous cannula. An incision is made in the peritoneum around the lower sigmoid, the inferior mesenteric vessels are divided and tied, and the rectum is mobilized by dissecting it first from the sacrum and then laterally and anteriorly. The lower sigmoid is divided with a cautery between two clamps, the clamp on the upper end being inserted through a short incision to the left of the main incision, and

the stump is drawn through for the artificial anus. The lower end is closed with sutures and dropped into the pelvis, and the peritoneum is sutured over it. The anus is closed with a stout suture and the operation is then completed from below. The rate of flow of the intravenous injection may be increased if the patient appears to be shocked during the operation. At the end of the operation, if the

Fig. 4.—Mr. C. F. E. The patient was operated upon on October 24, 1924. An exploratory operation and sigmoidostomy had been done four months before this at a large Northern hospital. The growth had seemed inoperable but some radon implants were inserted. I operated removing the rectum together with a portion of the prostate and the seminal vesicles. The operation was very extensive, and much of it was done with the cautery. The patient was quite ill for several days and required a transfusion of blood, but eventually recovered. He died February 17, 1928, from obstruction developing as a result of adhesions around the appendix, three years and four months after the original operation. A thorough post-mortem examination showed no trace of any malignancy.

shock is marked a transfusion of blood is given from a previously matched donor, through the intravenous cannula for the dextrose in Ringer's solution. In this way the operation may be done in one stage, so avoiding the dangers of infection and of transplanting or spreading the cancer cells while waiting for the second stage. (Figs. 4 and 5.)

Fig. 5.—Photomicrograph of the cancer of the rectum shown in Fig. 4. The cancer cells are distinct but fairly well differentiated. There is much surrounding connective tissue, probably due to the radon implants. It can be classified as not higher than grade 2. (X 150.)

### Discussion

Dr. Edwin P. Lehman, *University:* Dr. Horsley's presentation of this extremely important subject is of interest to all of us. He put considerable stress on the matter of early diagnosis, which is, I think, the phase of this subject of primary importance. Dr. Horsley quoted some figures presented at the so-called Cured Cancer Clinic which was held in Boston last spring. This meeting was held simply to demonstrate what the present methods of treatment of cancer can accomplish. The figures are worth everybody's study. In addition to the percentage of five-year cures quoted by Dr. Horsley, these figures also demonstrate the importance of early diagnosis. In quoting the following data, by the term cure a five-year period of freedom from symptoms is meant. In the total series of cases of cancer of the colon, 10 per cent were cured. In those cases classified as operable, the rate of cure was 19 per cent. In those cases classified as early, the rate goes up to 49 per cent. Similar differences occur in the cases of cancer of the rectum. The cure rate of the whole series was 23 per cent; of the operable cases, 55 per cent, and of the early cases 65 per cent. These figures, of course, represent an enormous difference in chance of life to individuals suffering from cancer of the large bowel if they can be brought to radical treatment early.

The problem as it is presented to the practicing physician is, of course, an extremely difficult one. The early symptoms of cancer of the large bowel are so close to normal variations of bowel habit and to the little aches and pains that everybody expects to have from time to time, that it is small wonder perhaps that relatively few cases come to operation early.

As an illustration of this fact, I may perhaps be excused for quoting some instances which I have presented before. In an unselected series of ten cases of carcinoma of the colon that came to the University of Virginia Hospital, six entered with definite obstruction. In these six cases the earliest symptoms elicited were as follows: (1) obstruction; (2) constipation after a lifetime of normal habits; (3) a sense of fullness after eating; (4) constipation followed by diarrhea; (5) irregularity of the stools and blood in the

stools; (6) black stools. Of the remaining four cases, one had had several attacks of obstruction and presented with a mass. One case was supposed to be appendicitis. One case was that of a girl known to have pulmonary tuberculosis, who had had three attacks of diarrhea with blood in the stool and was supposed to be suffering from tuberculous enteritis. The last case had simply a history of desire to go to stool without defecation.

Many of these presenting symptoms are in themselves not particularly striking. One would not be disposed to lay much stress upon them unless one is on the alert for this disease. Perhaps the most important point to make is that these symptoms have been persistent enough or troublesome enough to bring the patient to the doctor.

One wonders if the problem of the cause of the anemia which occurs with these right-sided tumors is solved. Dr. Horsley presented one view which is widely accepted, the view that it is due to the absorption of toxic products in the right side of the bowel. Many cases present an anemia which is close to the primary type and, in that respect, resembles the nutritional anemias which are being more frequently recognized. This makes us wonder if the anemia may not be due to faulty alimentation consequent to imperfect absorption or digestion, or both, which in turn is due to the mechanical presence of the tumor.

In regard to the technical aspect of Dr. Horsley's paper, I should like to say a word or two. I quite agree with him in regard to the illusory nature of asepsis in the so-called aseptic anastomosis. There is almost certainly contamination of any suture passed into the large bowel wall. One cannot accurately place it with assurance that it does not enter the lumen. It is improbable therefore that any anastomosis is truly aseptic. The increased difficulty of technical procedure and the increased uncertainty of a technically satisfactory union in these relatively blind methods must have great weight. Unquestionably the least septic form of anastomosis is the anastomosis done by ordinary methods in a bowel which has been properly prepared by the total diversion of the fecal stream. This method Dr. Horsley has frequently and ably emphasized

The mortality rate of the radical operation for cancer of the large bowel is almost bound to be high. Dr. Horsley is greatly to be congratulated upon the figures that he has presented. In the long run the operative death rate runs from 12 to 20 per cent, or even higher. This is a tremendous handicap for the surgeon at the outset, affecting materially the five-year cure rate. The possibility, however, of improving the five-year cure rate by radical surgery entirely justifies the risk. The surgeon, while endeavoring to lower his operative mortality by the sound methods presented, must, however, accept a large operative risk as part of the conditions of the problem, and the physician who makes the preliminary diagnosis must accept it as well.

Dr. R. L. Payne, *Norfolk:* I was much interested in Dr. Horsley's paper. I think just one phase of this discussion probably has not been emphasized enough. Dr. Horsley very aptly said that these patients should be prepared biologically, meaning, I think, that their intestinal canal should be prepared for the operative procedures which the patient has to undergo. Now, there seems to be a very hazy understanding by the average surgeon as to how he is going to put the patient on a diet that will be free from residue—that is, how to put him on a residue-free diet. I thought it might be of interest to relate our custom. First, before the colostomy is done (unless it is an acute obstruction), the patient is put on a residue-free diet which consists of nothing but hard candy, such as you buy in jars in the drug stores, pitcher after pitcher of lemonade and orangeade, and absolutely nothing else. First, you get a clean bowel. Then, feeling you have an absolutely clean bowel, you do the colostomy.

After the colostomy, stop the candy and the orangeade and water by mouth, except a little ice to moisten the mouth, and put them on 10 per cent intravenous glucose. The longer you can carry the patient on 10 per cent intravenous glucose, before the colostomy is opened, the better he will get along, up to ten days. After the colostomy is opened the patient is made to get up and around for a few days and is put on a general diet, and then the primary resection is done. My mortality has been less with the two-stage operations.

Bear in mind—five or six days of lemonade and candy; six to ten days of intravenous glucose, if possible; then up and around for a week or ten days, on general diet; and then resection.

Dr. Claude Moore, *Washington, D. C.:* I should like to say just a word, along the same line, that is, about the preparation of the patient before the X-ray examination. If more patients were prepared, as Dr. Payne has described here, for two days before the X-ray examination, more diagnoses could be made by the roentgenologist. Roentgenology is such a new field that the roentgenologist has not reached the same degree of perfection as the surgeon. Surgeons know that cancer of the colon frequently has only one leading symptom, secondary anemia; and they are sending patients for X-ray examination for the suspected cancer. Frequently a patient comes with the large bowel filled with fecal material. We cannot tell a bolus of fecal material from a tumor mass unless we can move it up and down the bowel. Many of them have only a physic before the X-ray examination; sometimes an enema. In that type of preparation you are not cooperating with the roentgenologist.

Dr. Horsley, closing the discussion: The cases reported by Dr. Lehman illustrate very forcibly the difficulty of the diagnosis of cancer of the colon.

I recall a case referred to me with a diagnosis of appendiceal abscess in which I concurred. I found that there was a large fungus-like cancer in the ascending colon with much necrotic material and local peritonitis.

The diet which Payne has mentioned and which has been advocated by Rankin and Bargen, in which only fruit juices and carbohydrates are given in order to reduce the bacteria in the colon, often serves an excellent purpose. However, it is not a well balanced diet, and after a few days these patients with cancer of the colon, who usually have low resistance, do not maintain their general health as well as they would with a properly balanced diet.

In all cases of malignancy of the transverse and left colon down to, but not including the rectum, I do a preliminary colostomy through a muscle-splitting incision on the right side, as has been described. Ten days or two weeks later, the cancerous bowel is resected. The portion of the colon distal to the enterostomy is given a complete rest, because the glass rod is so arranged that all of the fecal matter is shunted through the enterostomy opening. In this way the bacterial contents of the distal colon are much more quickly and effectively reduced than by any diet which would permit the fecal matter, even though small in amount, to pass over this portion of the colon. In addition, the patient can receive a better balanced diet than merely carbohydrates and fruit juices, and his strength can consequently be restored more rapidly.

It is important to be on the lookout for anemia,

which is a frequent symptom of cancer in the right colon. If the cancer is in the right colon and is rather extensive, the operation as indicated in the paper had best be done in two stages. First an anastomosis between the terminal ileum and transverse colon is made, and later the cecum and ascending colon are resected. When the ascending mesocolon is pendant and the tumor small, it may be possible to do this in one stage.

The points of diagnosis have been emphasized in the paper. Patients in whom there is a secondary anemia without obvious cause should be suspected of having a slowly bleeding tumor or ulcer in the stomach or duodenum, or cancer in the right colon. A passage of blood from the rectum should demand a rectal examination. A careful digital examination can detect the great majority of cancers of the rectum. This should be made with a rubber glove, and not a finger-cot. With a finger-cot the surgeon may unconsciously have some inhibition about putting his finger in too far, which is absent when his whole hand is protected with a rubber glove. A careful digital examination will often avoid the tragedy of having cancer of the rectum treated for months for simple hemorrhoids, while the malignancy is gaining headway.

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## RECENT PROGRESS IN PROSTATIC SURGERY.*

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Slightly more than a century has elapsed since the hypertrophied prostate was recognized as the chief causative factor of urinary obstruction in the aged male. The development of prostatic surgery may be roughly divided into three distinct periods:

1. The nineteenth century.
2. The first twenty-five years of the twentieth century.
3. The last seven years.

By way of review, I will ask your indulgence while I give a synopsis of these periods and with especial reference to the last two.

Sir Everard Home, in his monograph, was the first to promulgate clinically the relation between the hypertrophied prostate and urinary obstruction. Since that time surgeons began to devise means, devices and approaches with which to attack the prostate and its accompanying distressing symptoms. Because of the work of the medieval lithotomists the perineal route was the first selected, but with only partial removal of the prostate.

In 1876-78 an Italian, Bottini, employed a thermocautery to the prostate through the urethra. In 1882 Leisrink used the suprapubic route. During the last decade of the nineteenth century prostatic surgery, like general surgery, made great strides and there developed warm controversy between the protagonists of the perineal and supra-pubic operations. Thus was the state of affairs at the end of our first period.

With the dawn of the twentieth century Freyer, of England, and Fuller and Young, of America, attacked the prostate and perfected operations, which for twenty-five years were considered standards. I dare say that no one will ever improve upon Young's perineal prostatectomy, but the suprapubic operations of Freyer and Fuller have been improved. In these operations the whole gland was enucleated, in contrast to the partial removal of the hypertrophied tissue by their predecessors. During this time when total prostatectomy was in vogue the operation was attended by a very high mortality. Now we know that this was due to "renal insufficiency" because of the lack of renal decompression and preoperative preparation. During the following years, with the advent of the kidney function tests, the blood chemistry estimations, the preoperative phase was found to be just as important as the operation itself. The mortality was again greatly reduced with the gradual adoption of these tests: the suprapubic or urethral decompression, the cardiac estimation and treatment, and the postponement of the operation until operability.

These biological principles were the greatest advances in prostatic surgery from 1900 to 1925. Vasectomy and vaso-ligation also made their appearance during this period and greatly reduced the morbidity. Still prostatic surgery was attended with distressing morbidity and mortality. Practically every one in this audience can recall the suprapubic prostatectomy of five or ten years ago. It was an unscientific, blind, digital enucleation of the gland. This procedure had many complications in its wake. There apparently was no regard for hemorrhage, which was only controlled by trusting God, the inflated bags of Hagner and Pilcher, or gauze packed in the ragged prostatic cavity. You are also familiar with the inefficiency of these methods of controlling post-operative hemorrhage at times. Generally, the index to the prognosis was in proportion to the post-operative hemorrhage. No doubt you are also familiar with the long tedious hospitalization, with the gradual healing and leaking suprapubic wound and the sufficiently soaked and exhausted but brave

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old man, who had by this time truly reverted to his ancestrial amphibian stage.

The last seven years have yielded many important developments in the suprapubic prostatectomy. The next forward step was the approximation of the edge of the prostatic capsule and the torn urethra following glandular enucleation in contrast to the old packing method. Deaver, in 1928, reported this repair of the urethra. S. Harry Harris, of Australia, in 1928-29 reported a large series of primary closure of the suprapubic incision following the removal of the gland. The enucleation was done under direct vision with scissors, the bleeding points were sutured and the urethra reformed by suturing the hinder part of the prostatic capsule to the remaining urethra. By doing this, the raw surface of the prostatic cavity was obliterated. The bladder was drained through the urethra and the suprapubic wound closed primarily.

Lower had been closing the bladder after removing calculi and proceeded to do this following prostatectomy. To Judd belongs the credit of instrumental enucleation of the prostate in the manner of the modern tonsillectomy. He also sutured the remaining capsule and drained the bladder through the urethra. Because of the excellent work of these men, the advances in suprapubic prostatectomy may be summarized as follows:

1. Visualized digital or instrumental enucleation of the gland.
2. Immediate arrest of hemorrhage by ligation or suture of the capsular bleeding points.
3. Suture of the capsule to reduce the raw surface and repair the prostatic urethra.
4. Primary closure of the bladder and suprapubic wound with drainage through the urethra per catheter.

This summary brings us to the last phase of prostatic removal, i. e., transurethral partial resection.

In 1878, as mentioned before, Bottini first used the thermo-cautery to relieve prostatic obstruction. This blind and dangerous procedure was soon abandoned. Much later Young devised the "Young punch" for removal of median bar obstructions. This served its purpose, but many times uncontrollable hemorrhages followed. John Caulk deserves the credit for the improvement of the "Young punch," and was able to relieve prostatic obstructions in about 85 per cent of all cases. Stern and Collins each produced a resectoscope, but, like all the others, the cutting and coagulating currents had not been perfected. Later, McCarty and Davis made improvements upon these and today we have a very useful and satisfactory instrument. It seems that surgery, like the progress of industry, is approaching the electrical age.

The present electro-surgical units consist of a sheath, which is placed through the urethra and into the bladder and through which the working parts are manipulated. The essential working parts are the loop electrode and the vision telescope. The other electrode is usually placed in contact with the patient's buttocks. Under full view, the electrode loop is brought in contact with the portion of the offending prostate, and, with the activation of the "cutting" current, small portions of the gland are removed in longitudinal sections. If bleeding occurs the foot switch changes the current from the cutting to coagulating, which controls the hemorrhage. This procedure is repeated until at least three-fourths of the prostate is removed. Davis claims that 90 per cent of all prostatic obstructions can be relieved in this manner. Immediate and secondary hemorrhage from the inevitable slough are the recognized dangers. Not sufficient time has elapsed to justify the percentage of recurrences. It is, however, a most valuable advancement and is especially suitable in median bars, hypertrophied middle lobes and malignant prostates. It is only a partial prostatectomy, but relief is afforded, morbidity and mortality are greatly reduced and hospitalization is more than cut in half.

Lastly, with the present-day development of sacral and spinal anesthesia, the removal of the prostate, or parts of the prostate, by any method has been greatly facilitated. These seem to be the anesthetics of choice.

With the recent advance in the technique of the suprapubic operation as above described, the development of the transurethral partial resection of the prostate in selected cases and the use and knowledge of sacral and spinal anesthesias, prostatic surgery has become modernized and can now be called operations of precision.

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Discussion

Dr. Lawrence T. Price, *Richmond:* Dr. Daniel has just given you a very comprehensive history of prostatic work from the very beginning and on up to the present. This is a subject that has always been interesting to all physicians and to a great number of lay people because of the large number of men past the age of sixty who have to submit themselves to some sort of remedy for enlargement of the gland.

Dr. Daniel covered in his paper practically all of the history and the accepted plan of handling these cases. but I want to emphasize the preparatory treatment, which we at Johnston-Willis Hospital feel is the most important of all the proceedings in connection with the removal of the prostate gland; that is, to give the patient a most thorough general physical examination, to see that the kidney function and elimination are as near normal as possible—this accomplished by either suprapubic drainage or catheter drainage. We prefer catheter drainage in those cases in which the catheter is not too objectionable, and we find if we persist we can get the patient to allow the catheter to remain. In this way the patient can be on his feet and up and about the hospital, and thus in a much better frame of mind than if he is in bed with a suprapubic tube in. When the general condition of the patient justifies the operation, we feel that prostatectomy should not entail any mortality. In the last three or four years we have not lost a case.

The steps that Dr. Daniel outlined in his paper are certainly a great advance over the blind removal with the fingers in the rectum, with no idea of what you are removing but with the idea of getting rid of any tissue that would obstruct the passage of the urine after the patient should recover. By the open operation you can see exactly what you are doing and control all the bleeding by ligation of any blood vessel at the time of the operation. In certain cases the wound can be closed; in others, packing may be necessary.

I really believe, dividing the percentage of the three stages, the pre-operative treatment is about 90 per cent important, operative about 6 per cent, and post-operative perhaps 4 per cent. The pre-operative is certainly the most predominating in importance, though getting the patient up as soon as possible after the operation, within three or four days, and keeping him up is also important; then the removal of the packing, if any has been used, bags, and insertion of the catheter for transurethral drainage, and removal of the catheter after about the eighth day. The patient should be up in a chair all the while and leave the hospital in about three or four weeks.

Dr. Daniel's reference to the transurethral method of removal of the prostate, together with Dr. Dodson's paper yesterday, has covered this very interesting development of the subject most completely. In our hands we have not used this method as extensively as possibly some others, because of feeling that the cases should be very carefully selected and only those cases with median bar or small fibrous prostate, particularly of the posterior lobe, being the offending portion principally. We have not used this instrument in the ordinary large, adenomatous prostate. We feel that not sufficient of the tissue can be removed by this method; though it is claimed that, with the transurethral method, the remaining portion, or a good part of the remaining portion, of the gland gradually subsides and does not cause any difficulty, from the standpoint of obstruction. It is a procedure which is very nice when it works, and, if we perfect this method of work as we have other operations, the probabilities are that in time we can do the majority of the work transurethrally. I am very much impressed with the possibilities and with the results in the cases that I have done. I believe in a few years to come the electrical units that we are using will be perfected and that the precision will be a little more definite.

Dr. J. Allison Hodges, *Richmond:* I rise to discuss this question from a rather unusual point of view. It is a question of so much importance, certainly to persons who are advancing in age, that it enlists the interest of most of us. I have risen to say this—that I have been theoretically a student of the advances in the last several years of medical and surgical treatment of prostatic disease, because, probably, for personal reasons; and I wish to accord Dr. Daniel the praise of having summarized in a most masterly manner the unusually striking advances along this line.

I have risen, though, especially to say that I have kept in the closest possible touch with the transurethral electrical treatment of this condition and that the results, as I have investigated this method, have been amazing, certainly to me, and I expect to surgeons. Certainly I know nothing practically of such a condition or its treatment, but, following it with the thought that I may some day have to ask some one of my friends to utilize some of these methods, I wish to insist that they study this electrical development of the treatment of this disease. I realize, as Dr. Daniel has said, that it is applicable especially to early phases of the disease. I realize, further, that it has not been tried long enough to know the ultimate results from it; but I must say that the most amazing results that I have ever known from any form of treatment I have had from personal letters from numerous men who have been using this method and have convinced me that it is probably one of the greatest advances in surgical electrical treatment today. The last letter that I have had was from a patient seventy-two years of age who was operated upon on Thursday, left the hospital on Saturday, suffered no hemorrhage, was not shocked, and was in fine condition three months after his treatment. That is a sample of some of the results that I have noticed.

I wish further to say this, at this meeting when we have had really a little stir about rural practitioners and whether or not they have an opportunity to make the same fame and reputation as men happily or unhappily situated in the larger cities—I wish to say that the perfection of this method, in my personal opinion (remember, I am simply a professional tyro in the matter), shows us what can be accomplished by country physicians in a small country town, laboring in the best interests of the advancement of scientific medicine and surgery. The

man who has done much, if not most, in my opinion, along the line of the perfection and use of this instrument is a simple, plain, country man who, because of his unusual success, has been called to a larger field of activity. Still, unless he had had the preparation, and, far more, unless he and others had had the scientific appeal, unless they had had the energy and the courage to go ahead in the development of this subject, the world and the profession would never have had the advances that they have today. I say that this man's success is simply a climax of the approval that will come to any man, be he situated in the country or in the city, who does something that no one else has done so well before him; and Dr. Davis, I believe, has accomplished much that will be for the benefit of future suffering humanity.

Dr. F. S. Johns, *Richmond:* This subject of Dr. Daniel's paper has been thoroughly covered at this meeting of the Medical Society of Virginia. There is one point in his presentation which I think should be strongly emphasized. That is in reference to the unfortunate case who does not survive the prescribed treatment. If the case is suitable for surgery, it then becomes the question for our judgment to determine what type of surgery should be used. If it is a clear-cut surgical enucleation, and the hemorrhage is controlled, the results will be excellent. But, when making our rounds on the morning following the prostatic operation, if we see a certain amount of blood in the drainage, and if we wonder whether such bleeding is "too much," I would say to you, that when any man is old enough to have his prostate removed, any amount of bleeding is too much. I would impress upon you the fact that if hemorrhage is controlled at the time the patient is operated on (and by this I mean absolutely controlled), his chances for recovery are greatly increased.

Dr. Daniel, closing the discussion: I am very grateful to Dr. Price and Dr. Johns for their discussion, and I wish to say to Dr. Hodges that he is entirely too young to begin to consider prostatism seriously.

As indicated in the title of my paper, we (Dr. Price and Dr. Johns and I) do not advocate any single procedure. We have incorporated these advances, and they are extremely satisfactory. We have also found that spinal anesthesia approaches the ideal for any prostatic operation. We use the resectoscope in selected cases, as mentioned above. It is not a minor procedure, however, and I think some of these people get up too early, as reported by some authors. I do not think it will ever entirely supplant the suprapubic or the perineal operations. It should be remembered that the transurethral removal of the prostate is only a partial prostatectomy. I thank you very much.

## THE TREATMENT OF MALIGNANT NEUTROPENIA.*

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This is a relatively new and important disease in which the granulocytes are markedly decreased or totally absent from the blood stream.

This paper will be devoted to a theoretical consideration of the treatment of this disease as well as a review of the treatments that have been used and are now used.

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In a previous article,[1] I discussed at some length the different clinical types that have been found to make up this disease. A classification was formulated based on etiology, and on the clinical course. It will be necessary, to make this discussion on treatment intelligible, to repeat that there are two main groups, malignant (fatal) cases, and benign (non-fatal) cases. The clinical types are: acute, subacute, subchronic, recurring and cyclic. As practically all cases appear acute at their inception, or when first seen by the physician, the treatment would be the same for all types, but when the diagnosis of chronic neutropenia is established, other treatments are suggested.

A brief review of the physiology and pathology underlying this disease will serve to make many points clear concerning the type of treatment indicated.

In the normal physiology of the hematopoietic organ there are two main functions to be considered: first, the growth of the cells, and second, their delivery to the circulation. The concensus of opinion is that the factors involved in these processes are a maturation factor to keep the growth and development normal, and a chemotactic factor to call these cells to the blood stream.

The agents known to cause an increase in the percentage of granular leukocytes in the blood stream are many, such as cold baths, change from recumbent to the upright position, muscular exercise, foreign proteins, certain bacteria, adrenalin, pilocarpine, nucleic acid and its decomposition products, guanine and adenine, and mechanical stimulation to the vaso-motor nerves. Of the many substances that have been shown to call the granulocytes from the marrow, nucleic acid and its decomposition products are most likely to be a part of the normal mechanism. The continuous physiologic degeneration of large numbers of granulocytes in the blood stream gives a discharge of these products (nucleic acid, adenine, guanine, etc.,) into the circulation. A recent contribution on this subject is that of Doan,[2] in a study of the effect of large doses of nucleic acid and its degredation products on the hematopoietic tissue. We know that the above agents will cause the granulocytes to be delivered to the circulating blood, i. e., they represent a chemotactic factor. Our knowledge, however, is meager concerning an agent which will stimulate maturation of these cells. If these cells are not developing, an

agent to stimulate their delivery to the circulating blood is of doubtful value.

The granulocytes in the hematopoietic tissue are constantly active in the process of growth and development. Some idea of this activity may be had when it is considered that in each twenty-four hours approximately one-fifth of the total number of granulocytes in the circulating blood are destroyed and replaced. It will be remembered that the hematopoietic tissue manufactures erythrocytes, thrombocytes and granulocytes. The mechanism which keeps the rate of growth of these cells at a constant pace with the rate of physiologic degeneration was little understood until Minot and Murphy[3] introduced the liver diet for pernicious anemia, and Cohn et. al.,[4] isolated from the liver the specific substance responsible for the improvement in this disease. This involved the discovery of a maturation factor for erythrocytes, which was evidenced by the speedy appearance in the peripheral blood of reticulated erythrocytes of normal size. The liver extract now in use does not supply a maturation factor for granulocytes. However, the liver seems a likely place for the manufacture of this substance, as in an early period of fetal life it functioned as the hematopoietic organ for both erythrocytes and granulocytes. Perhaps a different process of extraction is necessary. There must be a similar maturation factor in the body to regulate the normal production of granulocytes. Therefore, the modern aspect of this problem involves an investigation of the chemical maturation factors which determine the granulocytes. These chemical factors are to be sought in certain organ extracts, as well as in specific dietary factors, some of which may be vitamines. The preliminary report by Morris et. al.,[5] on a specific hematopoietic hormone in normal gastric juice may be of significance, although their work has been on cases of pernicious anemia.

Sternal marrow biopsies and autopsies on cases of benign and malignant neutropenia clearly indicate that there are two types of neutropenia from a pathological standpoint. There are cases showing peripheral neutropenia with aplastic myeloid tissue. These may be considered as due to a lack of the maturation factor for granulocytes. This type bears a marked similarity to pernicious anemia. The other type of case shows a peripheral neutropenia with normal or hyperplastic myeloid tissue and may be considered as due to a lack of the chemotactic factor.

This physiology and pathology of the granulopoietic tissue should be kept in mind in considering a treatment for this disease. The practical application of this knowledge is discouraging for the cases that are to be treated at the present or in the near future, for it involves considerable experimental work.

A review of the literature indicated that most authors feel that a specific and satisfactory treatment has not yet been discovered for this disease, many feeling that recovery, when it does take place, is spontaneous and not influenced by the type of treatment. Many cases are on record in which spontaneous recovery took place in what seemed in the beginning to be a malignant (fatal) case. Such a case is reported by Hamberger,[6] a patient with 1,500 white cells and 2 per cent neutrophiles. There was a gangrenous area over the most prominent part of a left lateral cervical glandular swelling which sloughed. This patient recovered in four weeks without any active treatment and was still well five years later. One case that came under my observation recovered without any active treatment except rest and a diet rich in vitamine B. Also, in many recovered cases, several types of treatment were used in each case so that it was impossible to draw decisive conclusions as to the efficacy of the measures that were used, or to say which, if any, was responsible for the cure.

The treatment for this disease must be considered under two headings. First, the treatment for the acute cases, which means the employment of an agent which will stimulate maturation of the granulocytes and cause their delivery to the circulating blood in the shortest time possible. The mere absence of granulocytes from the blood stream for seven days is probably incompatible with life, and in a system devoid of granulocytes, infection quickly takes place. Second, we must consider the treatment of chronic cases with the object of preventing a recurrence, if possible.

Treatment for Local Lesions.—This disease is characterized by an early breaking down of the normal protective mechanism afforded by the neutrophilic granulocytes. With these granulocytes absent, the organisms ever present in and on the body quickly invade. Therefore, infection, local or general, is the most frequent complication of benign and

malignant neutropenia. The most frequent local lesions are in the mouth and throat. An antiseptic that will not cause a chemical destruction of the tissue is advised. For local treatment to the oropharyngeal lesions, Hamberger[6] advises the following: after nourishment the mouth and throat are sprayed with a saturated solution of potassium chlorate, a compressed air atomizer being used. Following the spraying, each ulcerated area and the gums are swabbed with a solution of copper sulphate, 10 grains to the ounce. This oral treatment is given as often as five times per day, less as improvement takes place.

Phlegmonous masses in any locality should not be incised unless absolutely necessary, since no local abscess forms under the existing granulopenic state. After the neutrophilic granulocytes return to the blood stream in sufficient numbers, abscesses may form, and incision and drainage may be instituted, if necessary. However, when the neutrophilic granulocytes return, many pathological conditions will right themselves. Surgical procedures of any type should not be attempted in these patients, as it is dangerous in the presence of a leukopenia, especially a neutropenia. Such a procedure may bring about a sloughing of tissue, as healing cannot take place normally in the presence of a leukopenia and neutropenia. There are cases on record in which necrotizing changes have appeared in the skin at the site of veni-puncture.

Miscellaneous Agents Used.—In the past it was thought that an agent introduced subcutaneously which would cause a local abscess would in this way stimulate the production of neutrophilic granulocytes. Turpentine was used for this purpose. Intramuscular injections of milk were given for the foreign protein reaction. Such agents are rarely used now, as they have not been shown to have any therapeutic value. Intravenous injections of gentian violet and acriflavine have been given, but they will not stimulate the production of granulocytes. Perhaps they were used with the idea in mind, that there was a blood stream infection. Fetal liver, and extract of bone marrow have been administered, but no definite results attributed to them. Squibb's leukocytic extract, in daily intramuscular injections of 50 cubic centimeters, divided into two doses, has been used in many cases along with transfusions and other forms of therapy. Definite and gratifying results from the above agents were lacking and they are rarely used now.

Preventive Treatment.—There is little definite information available as to the management of chronic cases and the prevention of recurrence of acute attacks. Roberts and Kracke[7] made a statistical study of 8,000 records of leukocyte and differential counts from a series of ambulatory patients seen between the periods of 1920 and 1930. Their study points out many interesting facts. In the granulopenic group of this series, the count ranged from 4,000 down to 1,000. There were 1,881 patients showing a granulopenia, or one out of every four. This number is significant, since benign and malignant neutropenia develops chiefly in the patients with granulopenia. In this group the chief complaint was weakness. The evidence accumulated indicates that weakness, exhaustion, fatigue, and tendency to sleep are the chief results of a depressed granulocyte count. Patients who have had more than one or two attacks know by their feelings when a granulopenia is present. A great many patients give a history of great mental stress or emotional shock. A number of chronic cases improve with rest. Roberts and Kracke, in their series, report two such cases: one, a man, improved during 1931, business being so poor he had rested more than usual; the other, a physician, improved after retirement, but it left him with a loss of thirty pounds in weight that he never regained, and a myocarditis. Just in what manner the granulopenia affects the heart is not clear, but an arrhythmia, tachycardia and tumultus heartbeat are recorded in many cases. This makes it appear essential that patients with granulopenia rest in bed until the granulocytes approach normal. From the foregoing, then, we can say that rest and freedom from mental and emotional stress should be advised. It would also seem advisable that such patients should refrain from using any drugs shown to have a depressing effect on the granulopoietic tissue, such as those containing the benzene ring. It would be advisable, also, to attempt to clear up all foci of infection, being especially solicitous concerning mouth hygiene; in fact, the most scrupulous general hygiene should be observed. A generous allowance of vitamine B should be included in the diet. Operative procedures on these patients should be approached with considerable caution, as the granulopenic state

may develop at any time and prevent proper healing. Routine blood counts should be studied with great care and all patients having a granulopenia should have careful observation and frequent blood counts.

Diet.—Diet may play a more important role both in etiology and treatment than is now imagined. Doan,[8] experimenting with pigeons by underfeeding, reduced the red marrow of the radius to an extreme hypoplasia. There were only three component parts left: blood vessels, fat cells, and a minimal residual framework of reticulum and reticular cells. Lossen[9] made counts of the total number of cells per cubic millimeter in children's marrow, finding that their number seemed, in a general way, to be dependent on the state of nutrition. If this can be proven and the dietary factor that has a specific influence found, it will have a most practical bearing. If, as Minot suggested, a diet rich in vitamine B is of material aid, especially in the chronic, recurring and cyclic cases, the diet should contain a liberal supply of the following, arranged in order of vitamine content:

Excellent—Asparagus; kidney, navy and soy beans; raw cabbage; raw tomatoes, wheat germ.

Good—Heart; liver; kidney; egg yolk; milk; whole cereals; green vegtables; fresh fruit juices.

Fair—Lean muscle meat.

A case of recurring benign neutropenia in a series of cases to be reported at a later date (*Arch. Int. Med.* 51:1933) received the following daily diet during a first and second attack: four egg yolks in milk (chocolate flavored) 750 cubic centimeters, tomato juice 500 cubic centimeters, orange juice 750 cubic centimeters, grape juice 250 cubic centimeters, puree of pea soup 250 cubic centimeters. As soon as the patient was able to take more solid food, creamed asparagus and cooked oatmeal were added to the list. The patient gained six pounds on this diet during two weeks in bed. This diet, and local treatment to the mouth and throat were the only therapeutic measures used in this case.

Treatment of Benign and Malignant Neutopenia Due to Arsphenamine.—Foster[10] successfully treated "malignant" neutropenia due to arsphenamine by the intravenous use of sodium thiosulphate. Kennedy,[11] and O'Leary and Conner[12] also report similar success. The best results are to be had from the intravenous administration of sodium thiosulphate, although it can be given by mouth. McBride and Dennie[13] advise that it be given in not more than 20 cubic centimeters of distilled water, with daily intravenous injections for four days, and then alternate days, for as many injections as may be necessary, in doses starting with 0.3 grams, and increasing the dose by 0.15 grams daily. It is non-toxic in doses up to 2.0 grams. Dodd and Wilkinson[14] say there is no specific or stimulating action attributed to transfusion in these cases. Moore and Keidel[15] call attention to the appearance of prodromal or warning symptoms in these patients. These are manifested by itching, mild rash, prolonged fever, malaise, or any tendency toward purpura. They examined the blood in several cases showing such symptoms and discovered a slight decrease in the neutrophilic cells, an eosinophilia varying from 5 to 8 per cent, a slight increase in the endothelial leukocytes and the presence of numerous fragile leukocytes.

Splenectomy.—Splenectomy was performed in one case reported by Baldridge and Needles.[16] The patient died thirty-five days after the operation. There was not the usual rise of leukocytes after the operation as in other cases, but there was the usual platelet response. The bone marrow at necropsy showed an overgrowth of myelocytes and myeloblasts almost as marked as in myelogenous leukemia. The authors comment that it was unfortunate that a biopsy of the bone marrow was not obtained before splenectomy, because it could have been determined the part played by the splenectomy in this overgrowth of myeloid cells.

Transfusions. — Transfusions have been used in many of the cases reported, some recovering, some ending fatally. Transfusion is essentially empiric. No definite conclusions as to its efficacy can be drawn from our experience or from the literature. In practically all of the cases, other measures were used along with the transfusions. It is an established fact that repeated transfusions lower the rate of erythropoiesis[32] and perhaps granulopoiesis. We do not have any evidence that transfusions actually stimulate granulopoiesis or that the neutrophiles added in 500 cubic centimeters of blood would be of any assistance, as the life of the neutrophile is very short (five days), and the number added would be quite small compared to the number needed. In Case 2 of a series of cases reported by Conner et. al.,[17]

they point out that three hours after transfusion, their patient had 300 less white cells. Taking into consideration the limit of error in counting and the rhythmic delivery of granulocytes to the blood stream, it is at least evident that there was not an increase. In Case 13 of a series of cases reported by Jackson et. al.,[18] transfusion was followed by a reduction in white blood cells. Case 16 of the same series was given a transfusion after nucleotides had caused an increase of white cells to start, and there followed a reduction in white cells. Such a reduction of white cells was not seen in the other cases treated by nucleotides alone, after a rise had started. Apparently the rate of granulopoiesis was lowered in this patient by the transfusion. The blood from a healthy donor may contain the principles to bring about normal maturation, but the amount of this substance added to the recipient also would be too small compared to the amount needed.

Immuno-Transfusion. — In June, 1930, Fisher[19] reported the treatment of a case of "malignant" neutropenia successfully by immuno-transfusion. The patient was a nurse, aged 24, who had suffered with sore gums and malaise for two weeks. Finding Vincent's organisms on the gums, she was given .4 grams neosalvarsan intravenously. The next day she was much worse, developed sore throat, and was admitted to the hospital. The white cells totaled 1,200, with 6 per cent granulocytes. The second and third days she was treated with an ordinary transfusion of 500 cubic centimeters of unmodified blood, twenty-five million dead typhoid germs and an ampoule of sodium nucleate. There was no improvement in symptoms or blood picture. On the fourth day of her illness, a donor of the same group, who had recovered from this disease in 1927, was secured, and 500 cubic centimeters of his blood was given to the patient. The third day after this transfusion, or seven days after the diagnosis had been made, the total count was 7,800 and there were 21 per cent granulocytes. (In a spontaneous recovery, improvement occurs at about this time also.) In November, 1930, Harkins[20] also treated a case of "malignant" neutropenia successfully by transfusing into the patient 500 cubic centimeters of blood from a patient who had recovered from the disease.

No definite conclusions can be drawn from two cases. There is not any evidence so far to indicate that any kind of immune bodies are formed in the blood stream in this disease. If a recovered patient's serum contained immune bodies, relapses and recurrences should not be the rule. One attack does not give immunity from further attacks. It does not seem advisable to put a strain on the blood-forming tissues of any patient who has had an attack of such a fatal disease. We would not use a patient who had pernicious anemia as a donor for a recipient who had the same disease.

Transfusions and Neosalvarsan. — The practice of adding neosalvarson to the transfused blood now does not seem wise, as Farley[21] reviewed from the literature thirty-nine cases in which the function of the bone marrow was depressed following the use of various preparations of arsphenamine. The symptoms varied from those of purpura hemorrhagica to those of severe aplastic anemia and malignant neutropenia, depending on whether the principal effect was on the granulopoietic, megakaryopoietic, or erythropoeitic tissue, or on all of these combined.

Radiation of Bones.—This treatment was first suggested by Friedmann.[22] He applied, in measured amounts, 1/20 of an erythema dose of roentgen rays to the bones of the skeleton, using a hard filter (6 millimeters copper). He radiated the long bones in four cases, giving one to three treatments at intervals of from two to several days. He reports that improvement from roentgen ray treatment may begin within twenty-four to thirty-six hours, both in symptoms and blood picture. He says, regarding the dosage, that no definite judgment can be rendered. One irradiation with 1/20 skin unit dose may produce a blood crisis in one patient and in another it may take three doses to produce a change in the blood picture. In 1930, Friedmann and Elkeles[23] published another article on roentgen treatment of this disease. The first case treated by roentgen ray in this country was by Call et. al.,[24] and the technic given by Friedmann was used. Waters and Firor[25] report five cases treated with roentgen ray; four are still living; one was in extremis when first seen. Their technic was as follows: the lower extremities, the pelvis, upper humeri, and shoulder girdles were irradiated in the course of three or four treatments. Voltage values of 200,000 with aluminum and copper filtration, both separately and combined, with effective wavelengths ranging from 0.197 to 0.161 angstrom

units, were used. The measurment of dosage was effected by the employment of a dosimeter, reading in roentgen (R) units, adopting 600 units as the erythema dose, which was that agreed upon at the International Conference of Radiologists at Stockholm in 1928. When such a small dose is to be used, an accurate determination is imperative. Fussinger et. al.,[26] report, that roentgen therapy may, under certain circumstances, provoke an "agranulocytic syndrome" and report one case. Potter[27] reports a case which in the first stage gave the clinical and laboratory picture of malignant neutropenia, and states that it terminated with the picture of myelogenous leukemia, although, judging from the laboratory reports, it was a lymphatic leukemia. We do know that lymphocytes are more easily stimulated by roentgen ray than are the granulocytes. This patient was given seven irradiations of one-half erythema dose each, which is a much greater dose than that prescribed by Friedmann. Neidhardt[28] reports the treatment of a severe case with roentgen ray. He used 1/20 of the erythema dose. Two hours after the treatment, the cells rose from 500 to 800; eight hours later, 1,700; the second day, 3,800. A second treatment was given, and eight hours later the total cells were 9,200. The granular cells steadily increased and the clinical condition improved. Aubertin and Levy[29] say, concerning roentgen ray treatment: "The efficacy of radio-therapy does not appear doubtful, but it would be well to wait for further observations to appreciate its true value and to fix the rules of its application."

Rationale of Roentgen Ray Treatment.—In the adult, the marrow in the shafts of the long bones is mostly adipose tissue, having little or no blood-forming function. When excessive or pathological demand exits, there is a formation of new centers by differentiation of the myelobasts into granular myelocytes, the adipose tissue of the bone marrow being replaced by this newly-formed tissue. One theory is, that irradiation may aid in the formation of this new tissue. The only way of proving just what effect, if any, the roentgen ray has directly on the yellow marrow would be through biopsy as soon as the young granulocytes were appearing in the blood stream. Some say we cannot be sure whether this apparent stimulation is the result of chemical changes in the blood, or due to the roentgen ray itself, or whether the recovery is spontaneous. Certainly there is no evidence that a cell *per se* is affected by the roentgen ray other than in a destructive manner. Friedmann[22] says: "It is evidently essential that as large a surface of the body as possible be subjected to irradiation. Whether, thereby, a direct effect is exerted upon the bone marrow, or an indirect effect by the irradiation of other tissues is also an open question." Also, the effect of roentgen ray may be indirect, stimulating organs of internal secretion to produce maturation products for granulocytes. Doan's[2] theory is that roentgen ray benefits the type of case showing peripheral neutropenia with normal or hyperplastic myeloid tissue. The roentgen ray in these cases brings about a primary destruction of some of the intact myeloid foci with a liberation of autogenous nucleotide, whch then initiates the maturation and delivery of granulocytes from the remaining myeloid foci. It appears, from a review of the literature, and following the results in the case treated by Call et al.,[24] that the roentgen ray might have an important role in the stimulation of the granulopoietic tissue, but definite proof is lacking.

Nucleotide Therapy.—The nucleic acids of the animal body occur mainly in combination with protein material in the so-called nucleoproteins of which they form the characteristic radicals. The amount and character of the protein with which the nucleic acid molecule is combined varies, and the acid may, in certain cases, be found in cells in a free form. Those tissues are richest in nucleic acid which contain the largest amount of nuclear material and of nucleo-protein, as glandular tissues, thymus, spleen, liver and hematopoietic tissue. The nucleic acids are a distinct class of substances, characterized by their decomposition products. Nucleic acids on hydrolysis yield the purine and pyrimidine nucleotides. The purine nucleotides on further hydrolysis finally yield the purine bases, adenine and guanine.

The first work done on the nature of leukocytosis produced by nucleinic acid was by Ames and Huntley.[33] Jackson[34] was the first to demonstrate that pentose nucleotide existed in normal human blood. This substance is known to exist principally in the nuclei of living cells. Doan et. al.,[2] in their experimental work with large doses of nucleic acid, showed clearly its chemotactic effect. They also found that with nucleic acid there was a leukopenia preceding the leukocytosis, due

to a temporary storage of the granulocytes in the spleen. Then they found that the granulocytes could be called from the marrow by the split products of nucleic acid, adenine and guanine, and that after giving these substances, the leukocytes were not withdrawn from the circulation by the spleen, so that there was a direct leukocytosis without the temporary leukopenia. Reznikoff[35] reports four cases of malignant neutropenia, three of which recovered following treatment with nucleotides. The investigator actually used purine bases, a decomposition product of nucleotides, as he himself pointed out in a later issue of the same journal.[36] These substances given intravenously to rabbits caused a marked increase in the number of neutrophilic granulocytes without any effect on the temperature or any other cells. Adenine sulphate or guanine hydrochloride obtained from the Eastman Kodak Company was used. Other therapeutic agents were used along with this, so no precise conclusions can be drawn. Jackson et. al.,[18] in their series of cases, used the unbroken pentose nucleotide, called nucleotide K-96, which is prepared by Smith, Kline and French Company, according to the technic of Jones and Perkins[37] and under the direction of the Harvard Medical School. Twenty cases were treated. Thirteen were "malignant" neutropenia, five leukopenia and neutropenia due to an infection, and two benzol poisoning. Of the thirteen cases of "malignant" neutropenia treated, seven recovered. The first sign of improvement occurred between the third and seventh day, and was usually on the fifth day. The total and differential counts were invariably normal in ten days, sometimes eight. They comment: "The consistency with which the reaction occurred on or about the fifth day is of great significance. It is at this time that the reticulocyte rise begins to take place following liver therapy in pernicious anemia." This reaction would only tend to show that the time for the maturation of the granulocytes was about the same as that of the erythrocytes. We do not have any definite experimental proof, however, that the nucleotide K-96 supplies a maturation factor for granulocytes. The experimental work on nucleic acid and its decomposition products has shown only a chemotactic factor. Five of the cases of malignant neutropenia in this series, with no essential clinical differences from those of the recovered cases, died in spite of active nucleotide therapy. This result recalls the possible difference between the pathology of benign neutropenia and malignant neutropenia, i. e., the function of granulopoiesis was depressed, maturation had ceased, and the bone marrow was aplastic in the fatal cases, while in the benign cases of neutropenia the function of granulopoiesis was arrested, maturation had not ceased, and the bone marrow was not exhausted but was normal or hyperplastic, the chief fault seeming to have been in the delivery or lack of a chemotatic factor. It seems only reasonable to assume that if the cells are not developing they cannot be called to the circulation. The acute cases in Jackson's series were given 0.7 grams of nucleotide K-96 in 100 cubic centimeters of saline solution intravenously, daily for four days, and 0.7 grams in 10 cubic centimeters of distilled water, given in addition, intramuscularly, on the same days and on each day subsequently until there was definite improvement. The intramuscular injections usually give no reactions; the intravenous gives a sharp, temporary reaction sometimes. Jackson et. al., conclude: "We believe that these nucleotides may have a definitely favorable effect on the average inactive bone marrow and in certain cases of malignant neutropenia, and we believe that the substance is worth further trial in such cases."

Calcium Gluconate.—Hare and Childrey[38] report a case of malignant neutropenia in a patient whose symptoms suggested a disturbance of the calcium metabolism. Calcium gluconate was administered and granulocytes appeared in the blood on the fifth day following treatment. This suggested to the authors that this agent may be of therapeutic value.

## Summary

This paper is devoted to a theoretical consideration of the treatment for this disease, as well as a review of all forms of treatment to be found in the literature. The rationale of these treatments, where possible, has been discussed.

A specific and satisfactory treatment for cases having aplastic myeloid tissue has not yet been discovered; recovery if it occurs is probably spontaneous.

The physiology and pathology of the hematopoietic tissue has been briefly reviewed, and, based on this, the theory advanced that a specific treatment for certain types of this disease involves an investigation of the chemical ma-

turation factors which determine the granulocytes.


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*Stuart Circle Hospital.*

DISCUSSION

DR. WILLIAM B. PORTER, *Richmond:* I have had the pleasure of reading the Doctor's previous paper, appearing in the Stuart Circle Hospital Bulletin. It conta ned much useful data and it has a very clear classification of this very interesting and mysterious malady. The Doctor has covered in a comprehensive fashion what is known about the disease. I think the more one sees of malignant neutropenia the more he is impressed with the viewpoint expressed in the last paragraph of the paper, namely, that a specific treatment will be had from an investigation of the chemical factors concerned in the maturation of the leucocytes.

In the earlier literature dealing with pernicious anemia, the prevalent impression was that pernicious anemia was a disease fundamentally concerned with aplasia of the bone marrow. It is only in recent years that hyperplasia has been shown to exist in the bone marrow in Addisonian anemia. This has resulted in a search for a substance which would unite with the hyperplastic bone marrow and release immature red cells. It is suggested that a deficiency may exist in malignant neutropenia involving the leucoblastic tissue in the bone marrow.

As for the therapy of the disease I think we are still stumbling along as we did for many, many years in the therapy of pernicious anemia. I am perfectly certain, however, that the work in pernicious anemia will hasten the discovery of a remedy for this malady.

I want to thank Dr. Beck for the discussion, for it is a contribution to the sum total of our knowledge of this disease.

DR. WALTER B. MARTIN, *Norfolk:* I want to make just one remark in reference to the possible value of the intramuscular liver extract in the treatment of these cases. I have had occasion to treat three cases with the regular pernicious anemia liver extract intramuscularly, with recovery. One of these was of particular interest, being first seen about three years ago, with a rapidly progressing attack. At that time the patient was given the liver extract by mouth, and she recovered. Not much importance was attached to that, because some of these cases spontaneously recover. Two years later she had an attack, and we were able to detect it very early, when the drop in the white blood count first began. Very promptly on the intramuscular administration of liver extract there was a return of the blood picture to normal, with subsidence of the throat symptoms and of symptoms in the mouth

I know that three cases are not enough to base any conclusions on, but I think it is well to bear in mind as a form of therapy worth trying out.

# UNDULANT FEVER AND ITS RELATION TO BRUCELLA INFECTION (CONTAGIOUS ABORTION) IN CATTLE AND SWINE IN VIRGINIA.

## A Preliminary Report.*

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In recent years there has been a growing appreciation of the interdependence of the diseases of man with those of animals. Undulant fever is a classical example of this relationship, along with tularemia and the typhus group. Each year since 1925 has seen an increasing number of cases of undulant fever recognized and reported, and it is apparent that the disease is widely distributed in the United States, no large area of the country being entirely free from it.

The importance which it assumes as a medical problem in any locality will vary with local conditions. Epidemiological studies have shown that cases can be divided into three groups according to their probable mode of infection. In the first groups are included those cases which give no history of contact with livestock but have consumed raw dairy products from infected herds. This is largely an urban group. In the second group are included those cases which apparently originate from direct contact with infected livestock, whether it be cows or swine. This group is chiefly rural and is composed largely of farmers and veterinarians—(livestock group). In the third group are placed those cases which apparently originate from the handling of meat products after the slaughter of infected animals, chiefly swine. This is composed almost exclusively of abattoir employees—(abattoir group). To which group the cases belong in any given area must be established by careful investigation.

The epidemiological studies which have been made in this country have dealt largely with conditions as they are found in the middle western and northern United States. This study was undertaken to ascertain just what the problem is in Virginia, particularly in the vicinity of Charlottesville, to what extent cattle suffer from contagious abortion, how prevalent the infection is among hogs, with what frequency human cases of undulant fever occur and what the common source of human infection is in this State.*

*Read at the sixty-third annual meeting of the Medical Society of Virginia in Richmond, November 1-3, 1932.

### Historical Review

Ever since the brilliant studies of the British Commission to Malta, 1904-07, it has been well-known that a disease of man, variously called "Malta fever," "Mediterranean fever," or "undulant fever," caused by the "micrococcus melitensis" of Bruce (now called Brucella melitensis), was contracted by drinking raw milk from infected goats. In the United States, Craig (1905)[1] called attention to its sporadic occurrence and, later, Ferenbaugh and Gentry[2, 3] and Lake[4] found the disease to be endemic along the Mexican border where goat's milk was used to a considerable extent.

In 1918, Alice Evans,[5] a bacteriologist, called attention to the essential similarity or identity of the organism causing contagious abortion in cattle, B. abortus, and "B. melitensis," which caused abortion disease in goats and undulant fever in man. This work was extensively confirmed. A new species—Brucella melitensis—was created to include the group, and strains coming from caprine sources were designated as the melitensis variety, from bovine sources as the "abortus" variety, and from porcine sources as the "suis" variety.

The relationships of these microorganisms led to a serious search for cases of undulant fever in man in this country and elsewhere, originating from infected cattle or swine. For the first convincing report on the occurrence of such infections, credit probably belongs to Bevan[6] who in 1925 observed a series of thirty-five cases of undulant fever in Rhodesia, associated with infectious abortion in cattle, in one of which the cause was attributed to the manual removal of a placenta from a cow which had aborted. At about the same time Keefer (1924)[7] reported a case of undulant fever in Baltimore in which there was no traceable connection with goats.

Cattle raisers in this country and abroad have long been familiar with a disease of cows known as "contagious abortion." In 1897, Bang, working with Stribolt, demonstrated microscopically a small Gram negative bacillus from the uterine exudate of a cow with impending abortion and experimentally proved its etiologic properties. It was called Bacillus abortus (Bang). Because of the eco-

*Grateful acknowledgement is made to the State Board of Health for full information regarding the cases of undulant fever reported by physicians, and to the State Veterinarian for the free use of his records of tests made on cattle throughout the State.

nomic importance of the disease, it was extensively studied especially by the United States Bureau of Animal Industry. As early as 1911, Shroeder and Cotton[8] ascertained that infected animals excrete the organism in their milk, and demonstrated its presence in a large percentage of specimens of milk bought on the open market. From 20 to 35 per cent of dairy cows giving a postive agglutination test were found to be eliminating the organism in their milk. Of cows that had actually aborted 40 to 50 per cent were found to harbor B. abortus in their milk.

In 1914, Traum, working in California, recovered Bang's bacillus from swine. The infection in these animals is similar to that in cattle. It produces abortion, but has a greater tendency to become latent and undergo spontaneous cure in swine. The disease, however, does not appear to be so widespread among hogs in this country nor so important from an economic point of view as it is in cattle.

Carpenter[9, 10] brought convincing evidence that the organisms recovered from a series of human cases were identical with the organisms which cause contagious abortion in cattle, and that the source of infection in his cases was undoubtedly the consumption of raw cow's milk, containing B. abortus. As a result of these studies and by analogy with what was known to be the case in Malta fever, it was at first supposed that a very large number of cases of undulant fever must be occurring in the United States, and that the chief mode of transmission was by the consumption of milk from infected cows.

Further studies, however, established the fact that most people had a surprisingly high degree of resistance to infection. For example, the studies of the New York Veterinary College[11] showed that in a certain highly developed diary district, a large percentage of the animals were infected with contagious abortion. Approximately 20 per cent of the raw milk sold in this territory contained B. abortus in sufficient numbers to produce lesions in guinea pigs. In spite of this situation, in a population of 337,000 a considerable proportion of whom drank raw milk and had no direct contact with dairy cattle, only twenty-six cases of undulant fever had been recognized in the course of three or four years. Huddleson and Orr[12] found that among 500 individuals constantly exposed through an infected raw milk supply only 1.4 per cent showed evidence of infection. Evidently the bovine strain of Brucella is much less pathogenic for man than is the caprine strain.

The epidemiological studies quoted above and those of Hardy[13, 14] and Hasseltine[15, 16, 17] have established beyond all doubt, however, that a considerable number of cases of undulant fever in man are occurring each year as a result of the consumption of raw milk from infected herds. In addition to these, there is another group which are infected by direct contact with infected cows or pigs during life —farmers and veterinarians particularly,—or after slaughter—abattoir employees. Strains originating from swine have been found to be more virulent for man than are the bovine strains.

### Brucella Infection in Cattle in Virginia

As is well-known, cows are usually infected about the time of sexual maturity, and the presence of the disease becomes manifest by the premature expulsion of the foetus at the first or second pregnancy. Thereafter the animal may abort a second or third time and become sterile, or the disease may go on to spontaneous cure through the development of immunity. In a proportion of animals, however, it localizes in the mammary glands and may be excreted in the milk for months or even years.

The presence of infection is detectable by the demonstration of agglutinins for the Brucella organisms in the blood serum. This test is subject to the same errors of technique and interpretation in this disease as it is in others. When properly performed it affords an accurate indication of an active, latent or recent infection. The technique used in this study was that recommended by the United States Livestock Sanitary Association.[18] Complete agglutination in a dilution of 1:25 is regarded as suspicious, of 1:50 as very suspicious, and of 1:100 as a positive indication of infection.

In Table I is presented the results of testing three groups of cattle. The first group is the experience of the State Veterinarian's office in testing cattle in various parts of the State upon application by the owner. In a general way it represents a random sample of the cattle in the State, although the fact that many herds were tested because the owner was suspicious of the presence of contagious abortion may have tended to increase the percentage of positives. Nine and eight-tenths per cent were

TABLE I.—*The results of agglutinin tests for Brucella abortus with sera from dairy cattle, Virginia, 1931.*

| Sera from Dairy Cattle | 1. In State at Large | | 2. In Albemarle County | | 3. Supplying Undulant Fever Cases | |
|---|---|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Positive | 2,104 | 9.8 | 76 | 13.0 | 109 | 40.0 |
| Suspicious | 603 | 2.8 | 32 | 5.5 | 8 | 2.9 |
| Negative | 18,747 | 87.4 | 477 | 81.5 | 156 | 57.1 |
| Total | 21,454 | 100.0 | 585 | 100.0 | 273 | 100.0 |

found to react in titres of 1:100 or more. Many herds were, of course, found to be free from infection either because of chance or because the owner had taken steps to eliminate his reactors and keep a clean herd. A majority of herds, however, were found to be infected. Taking the figures as they stand, it may be said that as a maximum about 10 per cent of the dairy cattle in the State are suffering from this infection at any one time, and, based upon experimental evidence, about one-fourth of these, or about 2 per cent of the cattle in the State, are excreting Brucella organisms in their milk.

In an effort to ascertain more exactly what was happening in a limited locality, seventeen out of some thirty-six herds which were supplying milk to Charlottesville in Albemarle County were tested. Of these seventeen herds seven were found to have no reactors and were certified as free from contagious abortion to the State Veterinarian. Including the negative herds, there were 585 cattle tested. Seventy-six, or 13 per cent, were found to be positive reactors by repeated tests. The figure is not essentially different from that obtained in the State at large. Again, one can infer that 2 or 3 per cent of the cows supplying the milk to this municipality are excreting Brucella organisms. About one-half of the milk supply of this area is consumed in the raw state.

The third group in Table I consists of ten herds and 273 cattle tested because of association with the occurrence of a human case of undulant fever. One hundred and nine, or 40 per cent of the animals tested, were found to be positive reactors. The difference between this result and that found in the unselected herds is sufficiently large to strongly suggest a significant relationship between the occurrence of a high percentage of reacting dairy cattle and the occurrence of human cases.

### Brucella Infection of Swine in Virginia

In the experience of the State Veterinarian and of the Department of Zoology and Animal Pathology at Virginia Polytechnic Institute there have been no complaints of losses due to infection of swine with Brucella. Observations on swine herds distributed throughout the State were not available. It was thought that some indication of the situation might be obtained by testing samples of blood from hogs at the time of slaughter.

Since a good many hogs slaughtered in this State are shipped in from the middle west, care was exercised to obtain specimens only from lots raised and purchased locally. In order to obtain samples from different parts of the State, arrangements were made to secure blood specimens from abattoirs located at Richmond, Lynchburg, Charlottesville and Harrisonburg.*

As shown in Table II, 812 specimens of blood were examined. Only twenty-nine, or 3.6 per cent showed agglutination with Brucella organisms in a sufficiently high titre to be classed as positive. Most of these were in one lot slaughtered at Richmond. We were unable to ascertain the exact locality from which they came.

An occasional hog in the Charlottesville and Harrisonburg areas was found to react. This is no more than would be expected from the casual infection of a hog from imported sources, or possibly from association with infected cattle in the same barn or pasture. The experience is too limited to warrant any conclusion, but so far as it goes it fails to indicate the prevalence of infectious abortion among the swine in this State to an extent at all comparable with that prevailing in the dairy cattle.

*The authors wish to express their indebtedness to Dr. R. L. Getz, of Harrisonburg, and Dr. Goodwin, of Lynchburg, for assistance in obtaining this material for examination.

TABLE II.—*Results of agglutinin test with sera from swine slaughtered in abattoirs, Virginia, 1931*

| Swine Sera | Total | | 1. Charlottesville | | 2. Richmond | | 3. Harrisonburg | | 4. Lynchburg | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Positive | 29 | 3.6 | 3 | 1.9 | 25 | 5.1 | 1 | 0.8 | 0 | .0 |
| Suspicious | 209 | 25.8 | 36 | 22.6 | 137 | 27.8 | 30 | 24.8 | 6 | 15.0 |
| Negative | 574 | 70.6 | 120 | 75.5 | 330 | 67.1 | 90 | 74.4 | 34 | 85.0 |
| Total | 812 | 100.0 | 159 | 100.0 | 492 | 100.0 | 121 | 100.0 | 40 | 100.0 |

## Brucella Agglutinins in Human Sera in Virginia

Both because of the practical bearing which it has upon the interpretation of the agglutination test in the diagnosis of undulant fever and for the indication which it affords of exposure to this organism, a large series of human sera were examined by a uniform technique. The antigen used was a phenol killed suspension of a bovine and porcine strain which had been found by long experience to be a good agglutinator. It was standardized as to turbidity of tube No. 1 McFarland nephelometer. The sera were allowed to stand in contact with the antigen for forty-eight hours in the incubator at 37° C. The results are presented in Table III.

The first group is a series of 1,069 specimens of sera submitted for the Wassermann reaction. These were obtained in part from the Department of Dermatology and Syphilology at the University Clinic and in part from a random sample of the colored population in Albemarle County in the course of a Wassermann survey. They may be said, therefore, to be fairly representative of clinic experience in this section of the State.

It will be noted that in the Wassermann group only three out of the 1,069 sera showed agglutination for Brucella in dilutions of 1:100 or greater. There was no history obtainable of undulant fever in these three individuals. In general the results correspond with what has been observed elsewhere, i. e., relatively few normal individuals in the general population agglutinate Brucella in a titre of 1:25 or 1:50 and a reaction of this magnitude should be looked upon as significant and repeated. The occurrence of a positive agglutination in a titre of 1:100 is still more rare in healthy individuals and should be regarded as highly suggestive but not necessarily conclusive of the diagnosis of undulant fever. It may be explained by recent contact with infected animals or their products unaccompanied by clinical manifestations.

The necessity for caution is brought out by the results of examination of sera from abattoir employees and veterinarians as shown in Table III. These are groups specially exposed to Brucella infection through direct contact with animals in the pursuit of their occupation. It will be noted that the percentage of reactions found in high dilutions is very

TABLE III.—*The results of agglutinin tests for Brucella abortus with human sera, Virginia, 1931*

| Human Sera | Wassermann Group | | Abattoir Group | | Veterinary Group | |
|---|---|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Positive: 1:25 | 11 | 1.0 | 3 | 2.2 | 8 | 20.0 |
| 1:50 | 19 | 1.8 | 2 | 1.5 | 8 | 20.0 |
| 1:100 | 2 | 0.2 | 2 | 1.5 | 6 | 15.0 |
| 1:200 | 1 | 0.1 | 2 | 1.5 | 0 | 0.0 |
| 1:400 | 0 | 0.0 | 1 | 0.7 | 3 | 7.5 |
| Positive (1:100+) | 3 | 0.3 | 5 | 3.7 | 9 | 22.5 |
| Suspicious (1:25-1:50) | 30 | 2.8 | 5 | 3.7 | 16 | 40.0 |
| Negative | 1,036 | 96.9 | 125 | 92.6 | 15 | 62.5 |
| Total | 1,069 | 100.0 | 135 | 100.0 | 40 | 100.0 |

markedly increased in these specially exposed groups.

In the abattoir group, five, or 3.7 per cent, showed a positive reaction in titres of 1:100 or more. One of the five, a colored man who worked on the killing floor, was sick at the time the blood was obtained. His illness had been diagnosed as "lumbago" on account of pains through his back and about the sacro-iliac region. He was able to return to work in about two weeks. Two tests made later on this individual showed a lower titre—1:50. It seems not unlikely that his illness was a mild infection with Brucella although the evidence is by no means conclusive. The one individual giving a positive test in a dilution of 1:400 was a foreman who was enjoying perfect health at the time and stated that he had never been sick in his life. The other three positives gave no history of recent illness.

The experience with sera from veterinarians was similar, but even more striking. Specimens were obtained from forty, or about one-half of those registered in the State. At the same time a history was taken as to past illnesses simulating undulant fever.

Thirty-one of the veterinarians tested were engaged in practice, three in teaching and laboratory work, three in meat inspection, and three in State and Federal work. Sixty-two and one-half per cent showed agglutinins for Brucella in a dilution of 1:25 or more, and of these 22.5 per cent reacted in a dilution of 1:100 or more. In only one instance was there a clear history of recent recovery from a severe clinical attack of undulant fever resulting from exposure while engaged in post-graduate work on abortion in cattle and swine. In one other instance there was a history suggestive of a clinical attack of undulant fever three years previously, diagnosed as "arthritis." This serum showed a titre of 1:400. None of the remaining twenty-three who showed agglutinins gave a history indicative of a clinically recognizable infection with Brucella organisms.

Nine, however, did give a history of that very interesting skin eruption known as erythema Brucellum. It was characterized in four by an erythema more or less urticarial in appearance with itching and burning sensations, coming on within a brief time, a few minutes to a few hours, after the delivery of a calf, and localized to the skin of that part of the arm which had been introduced into the cow's birth canal. In five the history was similar, but the eruption papulo-vesicular, or even pustular in character. The eruption is apparently allergic in nature and due to sensitization to the proteins characteristic of Brucella infection in cows.

The comparison of sera from individuals in exposed occupations with those of individuals in the general population and the analysis of clinical histories leads to the inference that human beings may develop agglutinins in high titer in their blood serum from contact with the organism without the occurence of a clinically recognizable attack. This same conclusion is suggested elsewhere (Carpenter[11]) by studies which showed that the serum of persons drinking raw milk from herds known to be infected with contagious abortion commonly showed agglutinins, while sera from a large group of patients in sanatoriums where the milk supply was carefully pasteurized were negative. These facts must be borne in mind in interpreting the agglutination test in the diagnosis of undulant fever.

### Undulant Fever in Man in Virginia

Undulant fever was first recognized as an endemic disease in Virginia in 1927. It was made reportable by the State Board of Health in 1929. Records have accumulated of the occurrence of some eighty-three cases in the past four years. Although the physicians of this State cooperate very fully in the reporting of communicable diseases, it is entirely probable that a few more cases have occurred which have not been brought to the attention of the State Board of Health. It is still more probable that there were a considerable number of mild, unrecognized cases of undulant fever which were undiagnosed or did not seek medical advice. However, at the University Hospital in Charlottesville the admissions to the medical service during the past three years have been very carefully scrutinized for cases of this type. With the total admissions to the Medical Service amounting to about 2,000 per annum, there were six cases of undulant fever recognized in 1930, none in 1931 and, so far this year, there have been four.

So far as these figures represent the situation, and looked at purely from the point of view of morbidity rates, the disease is not statistically impressive as a medical or public health problem. On the other hand, looked at from the point of view of the individual

TABLE IV.—*Cases of undulant fever reported to the State Board of Health, Virginia, up to July 1, 1932*

| Year | 0–9 | | 10–19 | | 20–39 | | 40–59 | | 60– | | Unknown | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F | M | F | | Male | Female | Both Sexes |
| 1929 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 4 | 5 |
| 1929 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 4 |
| 1930 | 0 | 1 | 3 | 0 | 6 | 2 | 4 | 3 | 2 | 2 | 2 | 15 | 8 | 25 |
| 1931 | 0 | 0 | 1 | 0 | 8 | 3 | 7 | 1 | 1 | 1 | 1 | 17 | 5 | 23 |
| 1932 | 0 | 0 | 2 | 2 | 6 | 1 | 5 | 2 | 2 | 2 | 4 | 15 | 7 | 26 |
| Total | 0 | 1 | 8 | 2 | 22 | 8 | 16 | 9 | 5 | 5 | 7 | 51 | 25 | 83 |

who suffered from an attack and is incapacitated for work or earning his livelihood for from six months to a year or more, it has a great deal of importance.

In Table IV is presented the age and sex distribution of the cases reported as undulant fever to the State Board of Health by years since 1929. The experience conforms to that generally reported elsewhere. Very few cases are found among children in spite of the fact that they are large consumers of milk. This has usually been explained as due to a relatively greater natural resistance on the part of young children, analogous to the relative immunity of calves and young pigs. The explanation is not, however, altogether satisfying. The distinctly higher incidence among males as compared with females is clearly due to the greater exposure on account of occupation—veterinarians, dairymen, farmers, abattoir employees, etc. Among cases due to the consumption of raw milk, the two sexes are equally represented.

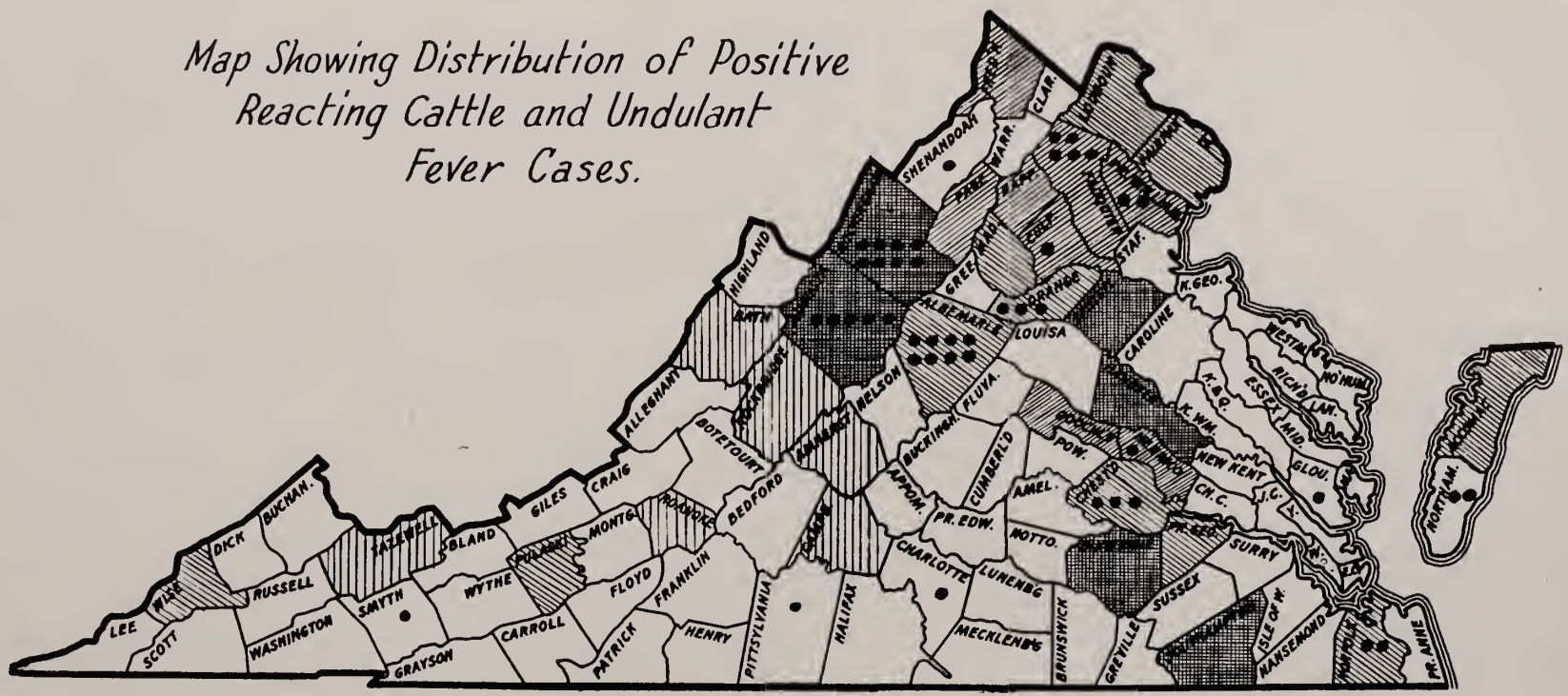
During the past two years, as many as possible of the cases reported to the State Board of Health as undulant fever have been investigated through cooperation with the local physician. Where the clinical course of the case and the laboratory findings seemed to establish with a fair degree of certainty of the diagnosis, attempt was made to ascertain the source of infection. The results of investigation of forty-five such cases are presented in Table No. V.

Eighteen, or 40 per cent, gave a definite history of direct contact with dairy cattle, and in some instances there were a few hogs on the same farm so that such animals could not be entirely excluded from consideration. In twelve it was possible to obtain reliable information regarding contagious abortion in the dairy herd. Seven of the herds gave a clear history of this disease and in all five which were tested positive reactors were found. In other words, up to the present all of the herds investigated in connection with contact cases have given evidence of the existence of contagious abortion. In all instances except one, the patient also drank raw milk from the same source, so that it is impossible to be sure

TABLE V.—*Results of epidemiological investigation into source of infection in forty-five cases of undulant fever occurring in Virginia, 1929-1932*

| Contagious Abortion Status of Herd Associated with Case | History of Contact with Cattle or Swine | | No History of Contact with Cattle or Swine | | Total |
|---|---|---|---|---|---|
| | Use Raw Milk | Use No Raw Milk | Use Raw Milk | Use No Raw Milk | |
| Positive by serological test | 4 | 1 | 8 | 0 | 13 |
| Positive by clinical history only | 7 | 0 | 1 | 0 | 8 |
| Negative by test and history | 0 | 0 | 1 | 0 | 1 |
| Unknown | 6 | 0 | 16 | 1 | 23 |
| Total | 17 | 1 | 26 | 1 | 45 |

*Map Showing Distribution of Positive Reacting Cattle and Undulant Fever Cases.*




*Explanation of Map*

- 0 to 5 per cent infection
- 5 to 10 per cent infection
- 10 to 15 per cent infection
- 15 per cent and over infection
- • Case of undulant fever

whether the organism gained entrance to the body through direct contact or through the alimentary tract.

In the remaining twenty-six cases which were investigated there was no history of contact with cattle, swine or goats. In every instance the patient was a customary consumer of raw milk. In nine instances, it was possible to test the herds which were named by the patient as their usual (though not always only) source of milk. The serological results indicated that eight out of the nine herds were undoubtedly infected with contagious abortion. One such herd which could not be tested gave a clear history of contagious abortion, and in one instance the clinical history and the serological test of an implicated herd was negative. It is to be noted that up to the present not a single case of undoubted undulant fever has been found in an individual who customarily consumed pasteurized milk.

In an effort to roughly correlate the occurrence of human cases of undulant fever with the incidence of positive reactors among dairy cattle a spot map of Virginia was prepared. The infection appears to be most widely distributed among dairy cattle in the Richmond area, in northern Virginia and in the Shenandoah Valley. The occurrence of human cases is to a striking degree correlated with this distribution. The highest incidence of the disease in humans appears to be in Albemarle, Augusta and Rockingham counties, in all of which the incidence of positive reactors among dairy herds is above 10 per cent. Reasoning by analogy, more cases of undulant fever would have been expected in the Richmond area. The probable explanation lies in the fact that almost 100 per cent of the milk consumed in Richmond is pasteurized, whereas in the counties named above, considerably less than 50 per cent of the milk is pasteurized.

Two illustrative cases are given below:

A white man, aged 33, was employed as a truck driver at a large boys' school. He had no duties around the dairy barn and gave no history of contact with cows, pigs or goats. The entire milk supply for this boys' school was pasteurized, and the investigator was at a loss to account for the origin of this infection. Upon close questioning, however, it was found that the laborer in question did not like pasteurized milk. Accordingly, he was accustomed to go to the dairy barn and secure his supply of milk before it was pasteurized. Thus, he drank about two quarts of raw milk per day and used cream on his cereals. The herd of seventy animals was tested. Five positive reactors and one suspect were found. The mature swine on the farm were tested and all were negative. The man had a typical clinical course of undulant fever, his serum at one time agglutinated Brucella up to a dilution of 1:3200. Brucella melitensis var. abortus was isolated from his blood.

A high school boy, aged 17, became ill with a continued fever. His physician suspected undulant fever from the clinical course. His serum was found to agglutinate Brucella in a dilution of 1:1600. This boy's father was employed as a herdsman on a large dairy farm. The dairy herd consisting of sixty-seven head had been tested for contagious abortion and twenty-one found positive and three suspicious. The herd had been split and the positive reactors segregated. This boy was accustomed upon his return from school each day to go to the barn in which the infected herd were being milked and drink his fill of the raw product. He had been doing this for about one month before the onset of his illness.

## Summary

In brief, this investigation has established up to the present that contagious abortion is widely distributed in the dairy cattle of Virginia, as a general average about 10 per cent being affected. Its intensity and prevalence, of course, varies in different parts of the State, the dairy farming sections, as would be expected, showing the highest incidence. Although swine are occasionally infected, the disease does not appear to be the serious problem in these animals that it is in cattle.

Cases of undulant fever in man are occurring occasionally in the State, particularly in those areas which show a high infection rate among cattle and a high per capita consumption of raw milk. About 40 per cent of the human cases appear to be attributable to infection by direct contact, and about 60 per cent to the consumption of raw milk from infected dairy cattle. As yet no case has been discovered which can be attributed to contact with infected swine or goats.

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### Discussion

Dr. Henry B. Mulholland, *University:* First, I should like to say that I think studies of this type, carried out as this one has been, are of the utmost importance. We are studying the disease at its source, and if we succeed in testing all of our cattle in Virginia we shall find out where the clinical cases are coming from.

This disease is almost certainly far more widespread than the present epidemiological statistics show. That has been the experience in most reported studies. The cases have been missed. For instance, in Denmark, a country where the dairy industry plays a very large part, up to 1927 no undulant fever was recognized. Then they started doing routine agglutinations on blood sent in for Wassermann tests, at Copenhagen, and found about five hundred positive agglutinations a year.

Some of the cases which Dr. Maxcy reported were seen in the University Hospital. They presented very interesting symptoms. It is useless to go into all the varied symptoms which a patient with clinical undulant fever may present, because they are manifold. There are several, however, that were present in practically every case. Headache is a very important one. An undulant type of fever, or irregular type of fever, was found in nearly every case. We were rather struck, also, with the prevalence of vague abdominal symptoms. The first case, which was not recognized by us, but which we saw over a period of two years before the diagnosis was made, had these vague abdominal symptoms, which indicated to us a mild degree of gall-bladder disease; but we were never able to prove that, and finally a veterinarian made the diagnosis for us.

Another very interesting case was a boy who came to us with a history of bilateral hydrarthrosis of the knee joints, with no history of fever except for a few days when an epidemic of measles was prevalent in his school. We did a test on this boy and found that the fluid in the joints, as well as his blood serum, was positive. Fluid in the joints is a very common sign in undulant fever. At other times the disease may present the signs of arthritis. The last case that we saw had these vague abdominal symptoms and also a neuritis involving the intercostal nerves. Sciatica is a common symptom, the condition seemingly showing a special predilection for the peripheral nerves.

One point Dr. Maxcy brought out is that there may be positive agglutination tests without clinical manifestations of undulant fever, or without the patient's ever having had clinical undulant fever. I ran across a report in one of the journals describing an epidemic of undulant fever in a Northern school, where two or three boys had clinical signs. The physician in charge of the school ran a test on all the boys, and well over a hundred had positive agglutination tests but did not develop the disease.

In the early days we had some very striking experiences with agglutination tests. Often, when we suspected strongly that the patient had undulant fever, we would send a specimen to two or three laboratories instead of depending only on our own. Now, in our laboratory we use three strains. One strain may give a positive test, while the other two will be negative. So I feel that much remains to be found out about this disease; and it may be necessary to use various strains before we can be sure, with a negative test, that the patient has not undulant fever.

Another fact we were struck by in the early days was that the patient's blood would not agglutinate in the lower dilutions, but when we got up to the higher dilutions it would agglutinate very strongly. Of course, now we are using dilutions up to as high as 1:1240 or 1:1280.

Dr. Wm. B. Porter, *Richmond:* I should like to ask Dr. Maxcy a question which I hope he will answer. How long does the average case have to be infected before the blood serum becomes positive?

Dr. H. B. Sanford, *Richmond:* I have noticed in these discussions that they all seem to be directed toward cattle, and I should like to ask the public health men and those who have discussed this paper what is the relation this undulant fever bears to abortions and premature labors and miscarriages in women, which are far more important than these things in cattle. I have not heard a word said along that line.

I want to report a case that came under my observation. This was in a colored woman who had had,

as well as I can recall from my history, from seven to nine abortions, miscarriages, and premature labors, altogether. I was impressed by something one of the speakers here tonight said—that after having had this fever for some time a cow would develop a certain amount of immunity against abortion. This colored woman I spoke of gave birth to a normal child last summer. Her first pregnanacy and her tenth were normal.

If anyone here can throw some light on that thing, I should certainly appreciate it.

Dr. Maxcy, closing the discussion: The first question, I believe, was in regard to the duration of infection in the cow. The organism has an elective affinity for the foetal membranes and uterus. After expulsion of the foetus, it tends to localize in the supra-mammary lymph glands or in the udder. Here it may persist for months or years. Whether it is being excreted in the milk can only be determined by inoculation of guinea pigs. This is a research procedure and available only where laboratory studies of this disease are being made. While cows may and do recover from the infection, one can never be sure that the cure is complete. The recrudescence of an infection in an animal thought to be recovered may reinfect a herd with considerable loss to the owner.

So far as I know, there is no danger from eating meat from infected animals. I have had no personal experience with the intradermal test. As to how long after the onset until the serum shows a positive agglutination reaction in human infections, I have no original observations to report. Reasoning by analogy with other infectious diseases, one would expect the reaction to appear within three or four weeks. There are cases in which the agglutinin titre of the serum never reaches a high point, but in which a diagnosis is established by recovery of the organism from the blood. Such cases must, however, be extremely rare.

There have been a few reports in the literature indicating that infection with Brucella organisms may cause abortion in human beings. At the University Hospital, we have examined a considerable number of sera from women who aborted during the past year. So far, we have found none who agglutinated this organism in significant dilutions.

Editor's Note:—Questions asked by three doctors were omitted as the reporter failed to catch the names so that the transcripts could not be sent for correction. These questions, however, are answered in Dr. Maxcy's discussion.

## ULCERATIVE SYPHILITIC LESIONS OF THE STOMACH—THE PATHOLOGICAL ANATOMY OF FOUR CASES.*

LEWIS C. PUSCH, M. D., Richmond, Va.

The question of the occurrence of syphilitic lesions of the stomach has passed, in recent years, from a state of skepticism to one of tacit acceptance. This acceptance is implied in numerous case reports embodying clinical and roentgenological aspects, without evident doubt on the part of the authors that they were dealing with syphilis of the stomach. Unfortunately in very few of these cases was opportunity afforded to study the pathological anatomy of the stomach.

This acceptance of gastric syphilis has been retarded by demands seldom made for the diagnosis of syphilitic lesions of any other tissue in the body. Foremost among such demands is that of the demonstration of treponema pallidum in sections of the gastric lesion. The demonstration of these organisms in sections of any tertiary syphilitic lesion always has been uncertain, and rarely successful. Their sparse distribution and resemblance to fibrillar elements of tissue has rendered their identification doubtful. The inadequacy of such a criterion for diagnosis is apparent.

Lesions of the stomach and intestines are not included in Warthin's[1] articles of 1918 and 1929, in which the structures of tertiary and latent syphilitic lesions of various organs and tissues are described. However, O'Leary[2] states that Warthin has found treponema pallida in sections of stomach. McNee[3] seems to have done this too, although Singer and Dyas[4] doubt that the organisms or structures described by McNee were treponema pallida. Harris and Morgan[14] have produced syhilitic orchitis in rabbits by the inoculation of a saline suspension of macerated human gastric wall of a lesion in which spiral objects, seen in sections, could not be identified as treponema pallida.

In the literature generalizations and classifications of the pathological anatomy of syphilis of the stomach are much more readily found than descriptions of the lesion in individual cases. It seems that there may be either a diffuse or a localized granulomatous induration of the wall, producing a linitis plastica type of stomach in the diffuse form, and stenoses or contrictions with or without ulceration in the localized form. Such changes are mentioned by Smithies,[5] McNee,[3] Singer and Dyas,[4] Kaufmann,[6] Windhozl,[7] Derman and Kopelowitsch,[8] Eustermann,[9] LeWald,[10] O'Leary,[2] Karsner,[11] and MacCallum.[12] Smithies also mentions a perigastritis. The granulomatous lesions occupy the submucosa chiefly, although all strata of the wall may be involved. Gummata or gummatoid areas may be embraced: perivascular aggregations of lymphocytes and plasma cells are conspicuous; obliterating vasculitis is mentioned. It is said that gummatous nodules may coalesce to form larger lesions and that ulcers are produced by sloughing of

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the overlying mucosa. Such ulcers may be single or multiple.

A pyloric localization of the lesion is prominent among the reported cases, sometimes with stenosis and retention. MacCallum states that the ulcerations may extend into the duodenum. Kaufmann, Eustermann, LeWald, and MacCallum point out that the ulcerative lesions are readily distinguished from the ordinary round chronic peptic ulcer. LeWald, on the basis of X-ray studies, states that they are always more extensive than the ordinary ulcers. In addition to being more extensive, descriptions and illustrations of the few individual cases reveal the ulcers to be markedly irregular in shape. A dumb-bell-like appearance may be produced by a localization of the lesion in the middle of the stomach.

The clinical effects of these lesions throughout various reports are fairly uniform. A vague gastric disturbance becomes marked and progressive. The most constant feature is either achlorhydria or subacidity. The thickened and indurated pylorus frequently presents itself as a palpable mass in the epigastrium. Such cases are apt to have a partial pyloric obstruction with retention. Pain, nausea, vomiting, anorexia, cachexia, and variable degrees of gastric hemorrhage are less prominent features. Eustermann places the average duration of symptoms at two years.

## Report of Cases

In the following four cases either the stomach or a resected portion thereof was available for study. In each of the first three resection of the pylorus was performed. The fourth case was studied at autopsy.

*Case* 1. A colored man, 51 years of age, admitted to St. Philip Hospital August 20, 1931, had had pain in the abdomen of four months' duration, associated with nausea and vomiting during the last three months. Blood had been present in vomitus and in stools. He had lost twenty-five pounds in weight during the four months. There was a palpable mass, not tender, in the epigastrium. Free hydrochloric acid was not present in the gastric contents. The Wassermann reaction of the blood was strongly positive. The last report, thirteen months after resection, indicates the patient to be working and apparently well.

*The Gastric Lesion.* The tissue removed at resection consisted of the distal 8 cm. of the stomach continuous with 2 cm. of duodenum. The indurated fibromuscular wall varied between 7 and 11 mm. in thickness, the submucosa constituting approximately one-half. The inner surface presented an annular ulcer, 3 to 6½ cm. long, proximally having a very irregular margin composed of markedly thickened, lobular-appearing gastric mucosa, and distally limited by the mucosa of the beginning of the duodenum, at the pyloric orifice, where the circumference was 4 cm. The base of the ulcer was smooth and grayish-brown; it lay in the more superficial portion of the submucosal stratum.

The floor of the ulcer was composed of a thin layer of necrotic cellular debris, overlying young granulation tissue densely infiltrated with lymphocytes, plasma cells, and fewer polymorphonuclear leucocytes, in part interwoven with the muscularis mucosae. Several gummatoid areas were observed, but no classical gummata. Beneath, the increased thickness of the submucosa was due to edema, fibroblastic proliferation, and dense, well circumscribed, perivascular and perilymphatic aggregations of lymphocytes and plasma cells. These sharply defined perivascular groups constituted the most constant feature of the histopathology. They extended throughout the wall of the stomach, through the hypertrophied musculature into the serosa, and also far beyond the margin of the ulcer, presenting a greater extent of inflammatory response than is usual in non-specific inflammation. They occurred partly as mantles about the blood vessels, and partly as eccentric nodules associated with the adventitia.

For the most part the blood vessels themselves were not altered, although in a few instances both arterioles and venules had narrow lumina and thickened walls, effected by medial hypertrophy and fibroblastic proliferations involving intima, media and adventitia; in some instances inflammatory infiltration of the vessel wall itself occurred.

The margin of the ulcer was abrupt in some areas, composed of intact, edematous, hyperplastic mucosa infiltrated with plasma cells and lymphocytes. In other portions such a mucosal border was separated from the ulcer proper by a narrow tapering zone in which the superficial half of the mucosa was necrotic, ragged, and mixed with inflammatory exudate.

*Case* 2. A colored woman, 26 years of age, admitted to St. Philip Hospital, August 17, 1931, complained of a dull, vague abdominal

pain after eating; the duration was one year. Occasionally the pains were followed by vomiting. There were periods during which she would be free from symptoms. There was no free hydrochloric acid in the gastric contents.

Fig. 1.—Case 2. Pylorus and portion of duodenum removed at resection, opened and spread apart, with all of the inner surface and cross section of the wall exposed. The shaded portion represents the ulcerated surface, which is seen to occupy the circumference, with the proximal margin irregular in contour. The wall is markedly thickened.

The Wassermann reaction was negative. The date of the pyloric resection was August 29, 1931. Thirteen months have elapsed; the patient is reported to be well.

Fig. 2.—Case 2. Submucosa. Edema and perivascular aggregations of lymphocytes and plasma cells. A small giant cell is seen in the large, eccentrically situated group.

*The Gastric Lesion.* The specimen consisted of the pylorus of a stomach, 6 cm. long along the greater curvature and 4 cm. along the lesser, continuous with 2 cm. of duodenum. A rather shallow ulceration, very irregular in shape, 3 to 7½ cm. long, extended throughout the length of the specimen and completely around the circumference of the pyloric orifice, involving both stomach and duodenum. The base of the ulcer, lying at a level just external to the muscularis mucosae, was flat, smooth, mucoid to palpation and grayish-red in color, streaked with a grayish-white film of necrotic debris. The irregular margin consisted of abruptly rising, swollen, gray mucosa. The markedly indurated wall varied between 8 and 12 mm. in thickness.

Microscopically, the structure was the same in character, with the same distribution of its features, as in Case 1. It differed, however, in degree, the inflammatory response being more pronounced. Edema of the submucosa was extreme. An occasional solitary miliary gumma was found in the muscular strata.

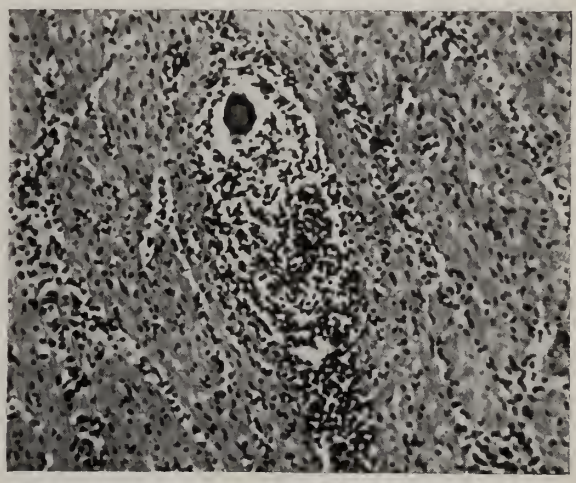

Fig. 3.—Case 2. Small gumma in muscular strata.

Bulky, well demarcated, compact masses of plasma cells and fewer lymphocytes, occurring anywhere in the wall, embraced gummatoid areas (somewhat ill-defined foci of a few epitheliod cells or macrophage histiocytes, with or without necrosis or a small giant cell). Vascular endothelial hyperplasia of capillaries and endarteritic alteration of arterioles were more marked than in the preceding case.

In a few lymph nodes, removed from the gastro-hepatic omentum at the time of operation, gummata having bulky achromatic necrotic centers occurred.

*Case* 3. A report of this case has been published by Dr. LaRoque and Dr. Shiflett[13] in the August, 1932, issue of *Annals of Surgery.*

A colored man, 23 years of age, had symp-

toms of vague gastric distress over a period of fourteen months. He was admitted to St. Philip Hospital on March 19, 1931, in a state of shock, after vomiting a large quantity of blood. His hemoglobin was 18 per cent and his red cell count 1,110,000. Two days later the hemoglobin was 11 per cent and the red cell count 890,000. The Wassermann reaction was positive. He was treated for secondary anemia and for syphilis, and discharged on May 28th with a hemoglobin of 62 per cent and a red cell count of 3,580,000. The total acidity of the gastric juice was 28° with free hydrochloric acid of 14°.

The patient was readmitted on November 11, 1931, because of vomiting of blood on the previous night, following abdominal pain and nausea of three days' duration. Roentgenological studies led to an impression of gastric syphilis with ulcer, hypertrophy of the gastric mucosa, and the presence of a pedunculated tumor of the stomach which at times prolapsed through the pyloric orifice into the duodenum.

Resection of the stomach was performed on November 18, 1931. Four months after operation a roentgenological examination indicated the gastric function to be satisfactory, with the stomach and site of anastomosis free from defects.

*The Gastric Lesion.* The specimen consisted of the pylorus of a stomach, 6 cm. long, 10 cm. in circumference at the proximal extremity, and 3 cm. in circumference at the distal extremity, the latter apparently coinciding with the pyloric orifice. The inner surface presented a "U" shaped ulcer, superficially appearing to be two discrete ulcers, with the limbs of the "U" 3 and 3½ cm. long, respectively, and both 1½ cm. in greatest width. The margin of the ulcer was of irregular contour and consisted of sharply demarcated thickened mucosa, which partly overhung the smooth flat base. The two arms of the ulcer were separated by a prominent perforated ridge of lobulated hypertrophic mucosa, 2½ cm. high, which was continued beyond the distal extremity of the specimen as a polypoid mass 2½ cm. in diameter. This overhung and concealed the zone of ulcerated surface which joined the limbs of the U and lined in annular fashion the pyloric orifice. The wall was markedly indurated with an average thickness of 1 cm.

The histology of the lesion was essentially the same as that in the two preceding cases. A dense wall of plasma cells and lymphocytes in a granulation tissue matrix bordered the ulcer, with bulky focal perivascular aggregations throughout the wall. Some foci had gummatous features. The thickened mucosal margin presented glandular hyperplasia and inflammatory infiltration. The submucosa was strikingly edematous. Changes in blood vessels were not pronounced.

*Case* 4. An obese white woman, 37 years of age, had had persistent nausea and vomiting for six months prior to admission. During this period she had lost 100 pounds in weight. The Wassermann reaction was positive. She had been given dilute hydrochloric acid for achlorhydria. Intravenous injections of salvarsan were begun three weeks prior to admission. She also received a course of mercury over a period of approximately three weeks. At operation a diagnosis of pylorospasm was made; a posterior gastrojejunostomy was performed. The patient became distended, and despite jejunostomy died thirteen days after the first operation.

The autopsy was limited to an examination of the abdomen. Stomach and duodenum were distended. There was an acute interstitial inflammation of a Meckel's diverticulum. Liver, kidneys and adrenal glands presented marked toxic degenerative alteration. A group of gummata several centimeters in diameter occurred in the left lobe of the liver.

*The Gastric Lesion.* An ill-defined shallow ulceration occupied the circumference of the pyloric orifice and extended proximally a distance of 4 cm. The distal or duodenal edge was not well demarcated. The proximal margin was irregular in outline and composed of gastric mucosa scarcely elevated above the base of the ulcer. The base was smooth and hyperemic. The maximum thickness of the indurated wall at the site was 11 mm. The circumference of the pyloric orifice was 15 mm. A small shallow ulcer of similar character, but without appreciable induration of the wall, occupied a portion of the mucosa at the cardia.

On microscopical study the shallow ulceration was found to be limited to the mucosa. The dense inflammatory infiltration present in the preceding cases was lacking here, yet perivascular groups of lymphocytes and plasma cells associated with fibrous tissue proliferation occurred throughout the thickness of the wall. The submucosa was not edematous, the

intact mucosal margin not hyperplastic, and the musculature only moderately hypertrophied.

### Comment

The criteria on which diagnoses of syphilis of the stomach were made in these four cases are: (1) clinical courses typical of those generally accepted as characteristic of gastric syphilis; (2) achlorhydria in three cases, subacidity in the fourth; (3) a positive Wassermann reaction in all except Case 2, in which case syphilitic infection was manifest in the presence of classical gummata in perigastric lymph nodes; (4) an associated gastric lesion of structural features constant in all cases, features not characteristic of other known lesions of the stomach, but histologically characteristic of syphilis.

As pointed out by Warthin, the characteristic lesion of tertiary syphilis consists of perivascular aggregations of plasma cells and lymphocytes associated with fibrous tisue proliferation. Such lesions are not pathognomonic of syphilis, yet, with increasing experience, differences in degree, composition and disposition can be detected between the average syphilitic and the average non-specific lesion. The gumma is the classical lesion of tertiary syphilis, but not the characteristic lesion.

Difficulties in distinguishing a gumma from a tubercle are recognized; yet, in the cases herein reported, the sparsity of gummata, the absence of a structural disintegrative type of necrosis, and the paucity and small size of giant cells suggest a non-tuberculous nature.

Fungi were not observed. There was no indication of neoplastic disease.

In all four cases the lesion consisted of a shallow ulceration of irregular outline, several centimeters in diameter, located at the pylorus with annular involvement of the orifice, sometimes continued into the duodenum. Bordering mucosa usually was hyperplastic and edematous. The wall at the site was thickened and indurated. The annular shape of the lesion with irregular margin, distinct from the smaller, round, deep, peptic ulcer, conforms with the configuration assumed by syphilitic lesions of the intestines, including rectal strictures.

### Conclusions

The characteristic ulcerative syphilitic lesion of the stomach is extensive, shallow, and of irregular shape, suggesting confluence of multiple ulcers or extension of one. There is marked induration of the wall at the site, and the mucosal border usually is conspicuously hyperplastic. The favorite site of localization is the pylorus, with annular ulceration of the orifice, the induration, consequent rigidity and narrowing leading to partial obstruction. The histologic structure is that of response to syphilitic infection. The gross features are more distinctive than the microscopic.

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### Discussion

Dr. S. W. Budd, *Richmond:* Pathologists are all not agreed as to syphilis of the stomach. There are two very definite schools of thought as to what constitutes gastric syphilis. To one Dr. Pusch belongs and to the other I belong. I felt very much complimented when Dr. Pusch asked me to discuss his paper.

The conservative element amongst pathologists have built barriers around gastric syphilis, so that very few cases are able to enter; while the liberals, of which Dr. Pusch evidently is one, have let down the bars and have admitted a large number of cases of gastric syphilis.

To date we have never been able to demonstrate satisfactorily the Spirocheta pallida in syphilis of the stomach. This is not an unusual state of affairs, because we are seldom able to demonstrate the Spirocheta pallida in syphilis of other tissues. To find them we have to look in congenital syphilis. They are present in the livers of congenital syphilitics in great numbers. Recently, Harris described a spirochete which he could not definitely identify as the Spirocheta pallida. So far, a definite gumma has never been demonstrated in gastric lesions. I am glad that Dr. Pusch calls his lesion "gummatoid." It is a lesion which simulates gumma. Harris has shown that, although he was not able to demonstrate the Spirocheta pallida, he could produce a syphilitic orchitis by inoculating the testicle of a rabbit with material from an ulcer of the stomach.

I wish to compliment Dr. Pusch upon the manner in which he has presented his case. He has cer-

tainly made his cases fit within the dictum prescribed by Warthin. That syphilis of the stomach does exist is attested by the fact that so many of our cases under treatment for syphilis will have a disappearance of their stomach symptoms. Only yesterday I was talking to a gentleman of our profession who said he has treated six cases of syphilis of the stomach with antisyphilitic remedies and that all have gotten well. The fact that Harris has demonstrated that syphilis of the stomach exists, even though we cannot demonstrate the spirochete in the tissues, and that we are getting therapeutic effects from our treatment for syphilis, makes us think this disease may exist more frequently than we of the conservative element admit.

In conclusion, I should like to say that a positive Wassermann test is very treacherous in any lesion of the stomach. We may lose valuable time while we are waiting for the therapeutic effects of antileutic remedies if the patient has a cancer and not syphilis. If we have a suspicious lesion of the stomach, I think we should have an exploratory operation, because a delay of several weeks or months may lead to very serious consequences.

## DELIVERY.*

HENRY J. LANGSTON, M. D., Danville, Va.

In reviewing literature we find that the earliest description of labor and delivery is reported in the Old Testament. I desire to quote the first recorded delivery which resulted in a live baby and death for the mother:

"And they journeyed from Bethel; and there was still some distance to come to Ephrath: and Rachel travailed, and she had hard labor.

"And it came to pass, when she was in hard labor, that the midwife said unto her, Fear not; for now thou shalt have another son.

"And it came to pass, as her soul was departing (for she died), that she called his name Benoni: but his father called him Benjamin.

"And Rachel died, and was buried in the way to Ephrath (the same is Bethlehem).

"And Jacob set up a pillar upon her grave: the same is the pillar of Rachel's grave unto this day." Genesis. Chap. 35; Verses 16-20.

It would be interesting and worthwhile knowing, were we in a position to report accurately, the number of deaths to young women resulting from pregnancy, labor and the complications connected therewith which have occurred since the beginning of human existence; also, it would be of great scientific interest were we able to paint a picture representing the morbidities and invalidism which were primarily caused by the processes of pregnancy and the forces of labor. Certainly the number of women who have fallen prematurely by the wayside as a result of labor during the world's history would mount into millions. The women who have pathological conditions which necessitate one form or another of operation in the pelvis number many more millions than those who have prematurely died as a result of labor. I desire to get this picture in our minds so that it may offer to us a challenge to develop every scientific fact possible to make labor less dangerous and to prevent not only deaths but the many and varied pathological conditions which follow labor.

In order that we may profit most by this discussion, I desire to group the various types of deliveries so that we may discuss them in a manner which will enable us to manage each case as nearly as possible successfully. In this connection I also want to say that it is impossible to standardize the principles of obstetrics. As a matter of fact, the probabilities are that the reason we have made no more progress in this most important field is that our teachings and writings have been more or less given to us in a stereotyped manner.

We are assuming that our cases for delivery have been properly measured, properly studied and that the hour of labor has arrived. If we have all the facts of the case at our finger tips and we know our patient in a thorough-going manner, we are now ready for the delivery.

First: The Non-Operative Cases. There are two things essential for a satisfactory delivery. The doctor should know thoroughly the details of delivery and his patient, and the patient should have confidence in her doctor. As labor begins the patient should be prepared for delivery in the following manner: The big intestine should be thoroughly emptied with a high warm soda enema, or any kind of enema, depending upon which is preferred by the doctor. The genitals should be shaved or clipped. If the patient is to be delivered at home, her bed should be properly prepared. As labor advances, every effort should be put forth to make the patient comfortable and calm. It is my opinion that after the doctor is certain that the position of the baby is normal, that the birth canal is large enough for the passage of the baby, and that there are apparently no difficulties facing the forces of labor, he should then use freely any one or a combination of drugs to eliminate as far as possible the agonizing pains and the tortures of labor to the patient. After labor has advanced to the point where the lower uterine

*Read before the South Piedmont Medical Society, November 22, 1932.

segment has been effaced, the internal os is well dilated and the external os is dilated the size of a silver dollar, then the physician can use to a great advantage rectal analgesia of ether oil, or he can use large doses of sodium amytal. These drugs will not effect very much the progress of labor and after a few hours it will be discovered that the cervix is fully dilated, the head is engaged in the superior strait, and is passing down through the mid strait. As the head advances and is down on the perineum, the patient can now be given ether by the drop method and put almost completely to sleep. The vagina can be gently ironed out, and in this manner the second stage of labor can be markedly shortened, this assistance to the patient being always appreciated. In the meantime, it is much safer for the baby if, while this is going on, very close attention is paid to the heart sounds of the baby. It is my opinion that many babies perish while passing through the second stage of labor due to the fact that the attending physician pays too little attention to the baby. Also, another point we need to emphasize, because of its importance to the patient, is, as you get ready for the second stage of labor, the bladder of the patient should be emptied with a soft rubber catheter. Now that the head is down on the perineum and is almost ready to be delivered, support should be given to it to prevent too rapid advance, because, if it advances in an extremely rapid manner, we get extensive tears not only of the perineum but of the cervix. As the head is being delivered the patient should be completely anesthetized to keep the voluntary muscles thoroughly relaxed. From this point on abundance of time should be taken to deliver the trunk of the baby. It is rarely ever necessary to use any pulling on the head of the baby to deliver the trunk. Now that the baby is delivered, it should be allowed to rest on the abdomen of the mother and the vagina should be inspected.

Whatever damage is done to the birth canal in a normal delivery will be considered later in our discussion. There is a good deal of debate as to when the cord should be severed. There is one group of men who have studied the question very seriously who think that the cord should be severed immediately. Another group feels that the cord should be severed at the end of five minutes. Many observations have been made as to the advantages and disadvantages of both of these methods. The probabilities are it would be better to consider each case from the standpoint of severing the cord rather than making a hard and fast rule as to when the cord should be severed. Plenty of time should be taken for the expulsion of the placenta. Hurry at this point has many times caused complications which could have been avoided if proper time and consideration had been taken. After the placenta has been expelled, patient should be thoroughly cleaned, abdominal binder and proper pads applied. The pads should be made tight so as to produce pressure against the vulva.

Second: Operative Deliveries. In considering operative deliveries I desire to group the conditions so that certain fundamental principles in these conditions may be observed. First, the abnormal presentations with reference to the baby and abnormal position of the cord. In considering these abnormal positions we are assuming that the birth canal is of moderate size so that there is no doubt in mind about the passage of baby through the birth canal. Transverse position, breech, occiput posterior, prolapsed hand, prolapsed cord and presentation of feet are conditions which demand, in my judgment, assistance, so that we may avoid complications which may result in the death of baby and marked damage to the birth canal later in labor. After a most careful study of various methods and my own experience, I have found that the following procedure has made it possible for me to bring my still-births down to less than 2 per cent. Patients with such conditions I transfer immediately to the hospital where they are properly prepared for delivery. Then, I transfer them to the delivery room and, without giving anesthesia, if the cord is prolapsed, or the hand is prolapsed, I put them back into the uterine cavity under strictly aseptic conditions. Then I insert into the cervical canal a size 6 Voorhees' bag. This bag is filled with sterile water. When it is completely filled I use two ordinary hemostats instead of a ligature on the neck of the bag. Patient is now removed to her bed and a little weight varying from one pound to two pounds is attached. From this point on the patient is watched carefully and kept comfortable by the use of morphin, hyoscin, atropin and rectal analgesia. There is no danger to the baby now. The bag is watched carefully. As soon as the cervix is completely dilated, the patient is removed to the delivery room and,

if the rectal analgesia has not completely anesthetized her, she is given ether by the drop method. She is now thoroughly cleaned with sterile water and soap; bladder is emptied with a catheter, then the bag is removed by first letting out the water. Patient is draped, each leg is supported by a nurse, the vagina is thoroughly ironed out. I always use elbow gloves, then by the use of Potter's technic I go up into the uterine cavity and seize both feet in the case where the head is presenting and the baby is turned around and delivered gently and slowly and carefully. As much time as the case requires can be taken without any real danger to baby in delivering it. The trunk is delivered slowly and gently by very little traction and much manipulation. The shoulders are delivered by first delivering the anterior and then rotating the posterior anteriorly and then delivering it. With the free hand the condition of the head of baby is now examined. If there is no evidence of the cervix trying to clamp down on the head, with the baby riding on the arm and hand and the fingers pressing on the chin of baby, the patient's legs are lowered to about 15 degrees below the body. With the free hand gentle pressure is made over the occiput and, keeping the baby's head flexed, if there are no disproportions in the birth canal, the head slips through the superior strait. Now, if there is a marked tightness of the head in the vagina, instead of pulling on the baby's neck to deliver the head, the baby's body is brought almost perpendicular to the body of the mother and Piper forceps are applied to the head. Then allow the baby's body to ride on top of the forceps. With gentle flexion by use of the forceps and at the same time a moderate amount of traction, put a little bit of traction on the neck of the baby by grasping the baby by the back of the neck, using the shoulders for leverage, and the head is slowly and gently delivered. At the same time all secretions are kept from the mouth and throat of baby. Baby is then placed upon abdomen of the mother and abundance of time is taken for the expulsion of the placenta.

In cases of occiput posterior positions where the bag has not been used, after complete dilatation of the cervix and the head fails to engage in the superior strait, I find it wise to take these patients to the delivery room, put them to sleep, and use the same care with reference to technic in cleanliness. With the Kielland forceps rotate baby's head from the occiput posterior to the occiput anterior. When this is done, allow the forces of nature to drive the baby's head down in the mid strait. At this point Kielland forceps are applied and with gentle traction and manipulation the baby is delivered slowly and carefully.

Placenta Previa Marginalis: If labor is active and vigorous and there is no marked evidence of bleeding, it is well to allow these patients to go on into so-called normal labor. If, on the other hand, there is some bleeding, I use the Voorhees' bag in the same manner as described above, for two reasons. First, to control hemorrhage, and, second, to shorten the first stage of labor. As soon as the cervix is completely dilated I use the same technic for delivery as described above.

Conditions which require delivery by some other method than by the birth canal are these: Placenta centralis, previa, dystocia of the cervix, disproportion between the birth canal and baby, markedly contracted pelvis, abruptio placenta, hydrocephalus, and normal size birth canal with an abnormally large baby. There may be other conditions which would require Cesarean section, but we believe the above are the ones that should be considered. The technic for Cesarean section is unnecessary to describe, for we feel that men who are doing obstetrics have acquainted themselves with the principles sufficiently to cause us to proceed with two or three points which we believe are wise to think over. The first one is the preparation for Cesarean section. Such cases as we have named should not be forced to go through the experience of the test of labor, because, if there is anything to the use of measuring instruments, I believe that physicians can determine without the test of labor what the procedure should be. If possible, with these conditions facing us, carry the patient almost to the hour of labor, then transfer her to the hospital and prepare her carfeully for what I regard as the biggest and most dangerous operation which we have to perform today, because, after I have studied the records of a large number of clinics and some of the best men in the country, I find that the opportunity for a patient to get well and live when she has to have a Cesarean section is six times less than by being delivered by the birth canal. After the patient has been prepared for operation, the form of anesthesia should be considered. If she has a good heart and good lungs and her blood pressure is within the range of

normal, ether is as safe as any anesthetic; also spinal anesthesia may be used. When this has been settled, avoid giving a hypodermic of morphin and atropin before operation. I believe many babies have their respiratory center paralyzed by the use of morphin in Cesarean section, and as Cesarean section is performed quickly, the baby has a way of absorbing so much morphin that it has difficulty in breathing. With patient anesthetized, the technic for Cesarean section is to be considered. Some men like to follow DeLee's principles of Cesarean section, and they have obtained wonderful results; some men like to do the classical Cesarean section, and they have obtained fair results. I personally prefer to do a low Cesarean or a Cesarean above the umbilicus. In some ways I have had better results by doing a Cesarean above the umbilicus, opening the fundus high. In these cases you can use a very short incision both in the uterus and in the abdomen. I locate the feet of the baby after the uterus is opened and use the same technic in getting the baby out of the uterus as I do in delivering the baby by version. After the baby is delivered, take plenty of time to deliver the afterbirth. You give the uterine muscles, a chance to contract physiologically so that you have the minimum danger of hemorrhage. As the abdomen is being opened in Cesarean section, I usually administer one ampule of pituitrin hypodermically. After the placenta is delivered, the uterus is closed by three layers of sutures, all of them continuous; the last layer of suture is plain catgut and the incision in the uterus is completely covered by peritoneum. Abdomen is closed in the usual manner. These patients should be treated freely by the use of morphin.

There is one question here of a debatable nature, and that is with reference to the appendix—whether or not it should be removed. In Cesarean section I always remove the appendix and I have had no bad results. I believe it is a wise step to take, for it saves many of these patients subsequent operations.

Prophylactic Forceps. In my experience I have found that the principles governing the notion of prophylactic forceps is a real advantage to both baby and mother. These patients can be completely anesthetized, forceps can be applied, and with gentle traction the baby can be delivered very slowly, frequently saving extensive tears and also saving any embarrassment which the baby may have in the birth canal.

The complications that we encounter in labor aside from hemorrhage may be briefly considered. They are pyelitis, nephritis, gallbladder disease, pulmonary tuberculosis, myocarditis with a decompensating heart, and so on. Such conditions must be considered not as a group but as individual cases. All these cases should be assisted in labor in the very best possible way, depending upon the patient and upon the notions the physician himself has. The eclamptic cases I have purposely omitted under the question of Cesarean section because I believe, after one studies the results of a large group of cases, that conservative, painstaking and careful obstetrical principles which may be followed, will result in more live babies and live mothers than Cesarean section, provided there are no disproportions with reference to the baby in the birth canal.

Briefly, I would like to consider the care of the birth canal immediately following delivery. As you probably know, I wrote a paper on this subject and presented it at the Tri-State Medical Society in February, 1929. Since that time I have repaired many birth canals of old lacerations, both of the perineum and of the cervix, and I have repaired many fresh lacerations. In checking over my results, I find that they are 95 per cent satisfactory from the standpoint of function. I have obtained perfect results from the standpoint of cosmetics. I would like to emphasize two or three points with reference to inspection of the birth canal. I personally have delivered a good many babies, and when I looked at the vulva after delivery I would say there was no damage done, but by putting my hand into the vagina and spreading the parts I have discovered tears on one and sometimes both sides of the vaginal wall. In normal deliveries I pull the cervix down, hoping to find no tear in the cervix, and have discovered that there was a tear on each side of the cervix from ¼ to ¾ inch long. If these tears are left unrepaired, you have a hypertrophied cervix following delivery. If the vagina is left unrepaired, you have either on one side or both sides of the vagina a sunken area; that is to say, if you open the vagina with a bi-valvular speculum and look along each side of the vagina, you will find a hollow space which would allow one to place in some cases a small hen egg, and still these hollow spaces would not be filled. These hollow spaces,

if left, cause a marked relaxation of the vagina which results in various degrees of retrodisplacement of the pelvic organs with a more or less marked cystocele and rectocele. I believe if more of us would inspect the vagina from the cervix out, you would find that your experience will coincide with the observations which I have made. Also, if these lacerations are left unrepaired, there is a lot of unnecessary pressure on the levator ani muscles. These in turn produce a dysfunction in these muscles and the patient is brought to the gynecologist or the general surgeon for what I regard as unnecessary operations with all the unnecessary expenses and suffering which should have been prevented.

### Conclusions

In this paper I have tried to avoid setting forth any radical notions about the management of delivery. I have emphasized, first, the importance of considering each case as a universe unto itself, and each physician is to be his own judge as to how he will manage his patient in labor.

Secondly, I have emphasized the importance of most carefully observing all the rules of cleanliness.

Third, the importance of constructive obstetrics is likewise emphasized, avoiding injury to baby and doing as little damage as possible to the birth canal. Whatever damage is done to the birth canal is repaired at the time of delivery.

Fourth, I have not in detail discussed the question of taking care of and resuscitating the baby after delivery, but the principles observed here must be these: Keep the baby thoroughly warm; keep all secretions removed from the mouth and esophagus and trachea, and, if baby has to be resuscitated, use gentleness and care. In my experience I find that using a catheter in the trachea and taking a sterile piece of gauze and putting it over the mouth of the baby when breathing into the baby's lungs have gotten the best success and most satisfaction.

Fifth, we should get away from our sterotyped notion of obstetrics and see the waste that is occurring annually in our country in this particular field. I believe that by cooperation and study we can make greater advance than by following practices. Some doctors have been criticized for what they have done, but we must find out why they do it and what are their results. Then we can be governed by the facts rather than by traditional notions and hearsays.

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## EARLY PHASES OF LOCOMOTOR ATAXIA.

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The confusion between tabes dorsalis in its pre-ataxic stage and manic depressive insanity is one which is confusing both to the laity and to the profession at large. Especially if one is looking for a mental disorder and forgetful of the spinal cord lesions, is this likely to occur.

In the pre-ataxic stage the symptoms vary a great deal. But often an excess of stimulation of the generative function precedes all other symptoms, followed in a few months by impotence. This may give the patient a feeling of well-being which simulates the manic state in manic depressive insanity.

Lightning pains may or may not be present. At about this time a slight failure of balance may be noticed. The patient cannot maintain equilibrium when standing on one foot, and with the eyes closed and the feet together a slight swaying motion is felt, rather than seen. Contrary to most textbooks, I have not observed the Argyll-Robertson pupil as an early symptom. There is, however, a gradual lessening of vision, due to optic atrophy, which often ends in blindness.

The urine is noticeably increased, and a man who has not been in the habit of voiding during the night is obliged to void frequently. Frequent emptying of the bladder is important, as it fends off the consequent distention of that organ.

The mental faculties gradually deteriorate, beginning with forgetfulness, aphasia, and so-called absent-mindedness. A period of restlessness is an early symptom.

The hands gradually develop a numb feeling, and small objects are hard to pick up. This is followed by the feeling as if a glove covered the hand.

It is at this point that a diagnosis of insanity is often made by the family and confirmed by the physician. These unfortunate people gradually go into the ataxic stage, which is easily recognized, and diagnosed as such, but not before the stigma of having been an inmate of some mental or psychopathic hospital is hooked on to them.

# Special Report

## MATERNAL MORTALITY IN VIRGINIA IN 1927 AND 1928.

### A Report to The Medical Society of Virginia and to The Virginia State Department of Health.

FRANCES C. ROTHERT, M. D., U. S. Children's Bureau.

EDITOR'S NOTE:—The study for this report on Maternal Mortality in the State of Virginia was undertaken by the Children's Bureau, U. S. Department of Labor, under the direction of Grace Abbott, Chief The inquiry was begun in 1927 and completed in 1928, this study having been requested by the Medical Society of Virginia in 1927. It contains valuable facts on this most important subject and is published in the MONTHLY upon request of Dr. Warren F. Draper, State Health Commissioner, and Dr. Greer Baughman, member of the Committee on Maternal Welfare. It is proposed to have this report also reprinted in pamphlet form.

#### METHOD OF STUDY

In February, 1927, the United States Children's Bureau, at the request of the Virginia State Department of Health and of the Medical Society of Virginia, and with their help, began a study of maternal mortality in Virginia. This study and similar studies in fourteen other States were made according to a plan worked out in the United States Children's Bureau with the assistance of the bureau's obstetrical advisory committee.

In Virginia in 1927 and 1928 the United States Bureau of the Census assigned 783 deaths to the group of causes "the puerperal state." This includes all deaths found to be due primarily to pregnancy and childbirth, in accordance with the International List of Causes of Death. (The revision of 1920 was used. as this was in force at the time the deaths occurred.) Deaths which were due to other causes but in which pregnancy or childbirth was a contributory factor were not included. Death certificates showing both puerperal and nonpuerperal causes are classified as puerperal or nonpuerperal according to the rules published by the Bureau of the Census in the Manual of Joint Causes of Death which follow, in the main, international practice.[1]

Copies of the 783 death certificates were obtained from the Bureau of Vital Statistics of the State Department of Health, also copies of the birth certificates of the children born to these mothers. The physicians and midwives who had signed the certificates were interviewed by physicians on the staff of the Children's Bureau, who worked in close contact with the State Department of Health and with the president of the Medical Society of Virginia.[2] If the patient had been in a hospital the hospital also was visited; and, with permission from the attending physician, the patient's chart was consulted. The physicians of the State were exceedingly generous in giving time and information for this study. The tabulation of the findings has been done in the Children's Bureau.

1. Manual of Joint Causes of Death, Showing Assignment to the Preferred Title of the International List of Causes of Death When Two Causes Are Simultaneously Reported. U. S. Bureau of the Census. Washington, 1925.

2. Dr. Margaret Swigart, Dr. Frances M. Hennessy, Dr. Janice Rafuse, and Dr. Frances C. Rothert were the interviewers.

#### MORTALITY RATES

As in the two years of the study, 783 deaths were certified to be due to puerperal causes, and there were 114,701 live births, the maternal mortality rate for the State for the period 1927 and 1928 was sixty-eight.

Tables 1 and 1a show the maternal mortality rates for the six years, 1924 to 1929, inclusive, for white and colored women and in the urban and rural areas of the State, as compared with similar rates in the United States birth-registration area as a whole during those same years.

TABLE 1

*Trend of maternal mortality in urban and rural areas of Virginia and the United States birth registration area: 1924 to 1929*

| AREA | MATERNAL MORTALITY RATES* | | | | | |
|---|---|---|---|---|---|---|
| | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 |
| Virginia: | | | | | | |
| Total..... | 65 | 70 | 80 | 62 | 75 | 71 |
| Urban..... | 100 | 95 | 123 | 104 | 121 | 100 |
| Rural..... | 56 | 63 | 67 | 50 | 62 | 62 |
| United States birth registration area: | | | | | | |
| Total..... | 66 | 65 | 66 | 65 | 69 | 70 |
| Urban..... | 73 | 73 | 74 | 75 | 78 | 78 |
| Rural..... | 58 | 55 | 57 | 55 | 62 | 62 |

*Deaths from puerperal causes per 10,000 live births.

Since statements as to the amount of maternal mortality rest entirely on the reports of physicians, much depends on their accuracy in certification. In sixteen cases in this study the physician gave in the interview information which, if it had been placed on the original death certificates, would have caused the deaths to be classified as nonpuerperal, although pregnancy or childbirth was a contributory factor for fourteen of them. As only those deaths were studied that had been assigned to puerperal causes on the original death certificates (or that were added after answers had been received to the queries sent out by the State Bureau of Vital Statistics and by the United States Bureau of the Census to physicians who certified deaths as due to ill-defined causes), it is not known how many deaths that were actually puerperal were assigned to some other cause on account of deficient certification. These sixteen cases were excluded from all the accompanying tables except Tables 1 and 2. It is probable that the 783 is more nearly the actual number of deaths than 767, and even that number may be too small. The detailed study was based, however, on the 767 deaths found by interview to have been puerperal. Within the puerperal group seventy-eight changes in classification were made as a result of the interview with the attending physicians. A few of these were mere shifts from one to another subtitle in a main group of causes of death. These changes largely balanced one another, the most noticeable result being an increase from thirty-six to

forty in the percentage of deaths attributed to puerperal septicemia and a decrease from thirty-one to twenty-eight in the percentage of those attributed to puerperal albuminuria and convulsions.

Table 2 shows the number of deaths according to cause, their relation to the whole number of maternal deaths, and the rates per 10,000 live births in accordance with the information given on the death certificates and that obtained in the interview with the attending physician.

Table 1-A

*Trend of maternal mortality among white and colored women in Virginia and the United States birth registration area: 1924 to 1929.*

| Area | Maternal Mortality Rates* | | | | | |
|---|---|---|---|---|---|---|
| | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 |
| Virginia: | | | | | | |
| Total | 65 | 70 | 80 | 62 | 75 | 71 |
| White | 50 | 53 | 71 | 48 | 59 | 52 |
| Colored | 100 | 110 | 100 | 94 | 114 | 116 |
| United States birth registration area: | | | | | | |
| Total | 66 | 65 | 66 | 65 | 69 | 70 |
| White | 61 | 60 | 62 | 59 | 63 | 63 |
| Colored | 118 | 116 | 107 | 113 | 121 | 120 |

*Deaths from puerperal causes per 10,000 live births.

The causes of the 767 deaths as ascertained by interview with the attending physician were: puerperal septicemia, 304 (40 per cent); puerperal albuminuria and convulsions, 217 (28 per cent); puerperal hemorrhage, 81 (11 per cent); other accidents of labor, 72 (9 per cent); accidents of pregnancy, 69 (9 per cent); puerperal phlegmasia alba dolens, embolus, sudden death, 22 (3 per cent); and causes following childbirth not otherwise defined, 2.

Tables 3 and 4 show the number and per cent distribution of deaths attributed to the various causes in the urban and rural areas of the State and among the white and colored women. In the urban areas are included the eleven cities that had 10,000 or more inhabitants in 1920—Alexandria, Charlottesville, Danville, Lynchburg, Newport News, Norfolk, Petersburg, Portsmouth, Richmond, Roanoke, and Staunton; the remainder of the State is regarded as rural. Of the 767 deaths 276 occurred in these cities and 491 in the rural areas; 50 per cent of the 276 urban deaths were of white, 50 per cent of colored women; of the 491 rural deaths 288 were of white and 203 were of colored women. Puerperal septicemia caused 50 per cent of the urban white deaths, 48 per cent of the urban colored deaths, 35 per cent of the rural white deaths, and 33 per cent of the rural colored deaths. The percentage of deaths from puerperal albuminuria and convulsions was twenty-four among the urban white women, thirty-one among the urban colored, twenty-five among the rural white women and thirty-four among the rural colored. The maternal mortality rates were higher in the urban than in the rural areas for every puerperal cause except puerperal hemorrhage, which was the same for both urban and rural areas; and the rates for colored women were higher than those for white women for every puerperal cause except puerperal phlegmasia alba dolens, embolus, sudden death, which was the same for both races.

Table 2

*Cause of death as given on death certificate and as shown by interview among women dying from puerperal causes in Virginia: 1927 and 1928*

| Cause of Death | Women Dying From— | | | | | |
|---|---|---|---|---|---|---|
| | Cause as Given on Death Certificate | | | Cause as Shown by Interview | | |
| | Number | Per Cent Distribution | Rate Per 10,000 Live Births | Number | Per Cent Distribution | Rate Per 10,000 Live Births |
| Total | 783 | ..... | ..... | 783 | ..... | ..... |
| Puerperal | 783 | 100 | 68 | 767 | 100 | 67 |
| Accidents of pregnancy | 79 | 10 | 7 | 69 | 9 | 6 |
| Puerperal hemorrhage | 80 | 10 | 7 | 81 | 11 | 7 |
| Other accidents of labor | 85 | 11 | 7 | 72 | 9 | 6 |
| Puerperal septicemia | 279 | 36 | 24 | 304 | 40 | 27 |
| Puerperal phlegmasia alba dolens, embolus, sudden death | 14 | 2 | 1 | 22 | 3 | 2 |
| Puerperal albuminuria and convulsions | 245 | 31 | 21 | 217 | 28 | 19 |
| Following childbirth (not otherwise defined) | 1 | * | † | 2 | * | † |
| Puerperal diseases of the breast | ..... | ..... | ..... | ..... | ..... | ..... |
| Non-Puerperal | ..... | ..... | ..... | 16 | ..... | ..... |

*Less than one per cent.
†Less than one per 10,000 live births.

TABLE 3

*Cause of death as shown by interview among women dying from puerperal causes in urban and rural areas of Virginia: 1927 and 1928*

| CAUSE OF DEATH AS SHOWN BY INTERVIEW | WOMEN DYING FROM PUERPERAL CAUSES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | | | Urban | | | Rural | | |
| | Number | Per Cent Distribution | Rate Per 10,000 Live Births | Number | Per Cent Distribution | Rate Per 10,000 Live Births | Number | Per Cent Distribution | Rate Per 10,000 Live Births |
| Total | 767 | 100 | 67 | 276 | 100 | 110 | 491 | 100 | 55 |
| Accidents of pregnancy | 69 | 9 | 6 | 23 | 8 | 9 | 46 | 9 | 5 |
| Puerperal hemorrhage | 81 | 11 | 7 | 17 | 6 | 7 | 64 | 13 | 7 |
| Other accidents of labor | 72 | 9 | 6 | 17 | 6 | 7 | 55 | 11 | 6 |
| Puerperal septicemia | 304 | 40 | 27 | 135 | 49 | 54 | 169 | 34 | 19 |
| Puerperal phlegmasia alba dolens, embolus, sudden death | 22 | 3 | 2 | 8 | 3 | 3 | 14 | 3 | 2 |
| Puerperal albuminuria and convulsions | 217 | 28 | 19 | 76 | 28 | 30 | 141 | 29 | 16 |
| Following childbirth (not otherwise defined) | 2 | * | † | ..... | ..... | ..... | 2 | * | † |

*Less than one per cent.
†Less than 10,000 live births.

TABLE 4

*Cause of death as shown by interview among white and colored women dying from puerperal causes in Virginia: 1927 and 1928*

| CAUSE OF DEATH AS SHOWN BY INTERVIEW | WOMEN DYING FROM PUERPERAL CAUSES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | | | White | | | Colored | | |
| | Number | Per Cent Distribution | Rate Per 10,000 Live Births | Number | Per Cent Distribution | Rate Per 10,000 Live Births | Number | Per Cent Distribution | Rate Per 10,000 Live Births |
| Total | 767 | 100 | 67 | 426 | 100 | 53 | 341 | 100 | 101 |
| Accidents of pregnancy | 69 | 9 | 6 | 38 | 9 | 5 | 31 | 9 | 9 |
| Puerperal hemorrhage | 81 | 11 | 7 | 50 | 12 | 6 | 31 | 9 | 9 |
| Other accidents of labor | 72 | 9 | 6 | 47 | 11 | 6 | 25 | 7 | 7 |
| Puerperal septicemia | 304 | 40 | 27 | 171 | 40 | 21 | 133 | 39 | 39 |
| Puerperal phlegmasia alba dolens, embolus, sudden death | 22 | 3 | 2 | 16 | 4 | 2 | 6 | 2 | 2 |
| Puerperal albuminuria and convulsions | 217 | 28 | 19 | 104 | 24 | 13 | 113 | 33 | 33 |
| Following childbirth (not otherwise defined) | 2 | * | † | ..... | ..... | ..... | 2 | 1 | 1 |

*Less than one per cent.
†Less than one per 10,000 live births.

### PERIOD OF GESTATION

Two hundred (26 per cent) of the 767 maternal deaths occurred before the last trimester of pregnancy was reached and 566 (74 per cent) after the last trimester was reached; the period of gestation of 1 woman was not reported. Of the 200 deaths before the last trimester was reached, 117 (59 per cent) were due to puerperal septicemia, 49 (25 per cent) to accidents of pregnancy, 32 (16 per cent) to puerperal albuminuria and convulsions, and 2 (1 per cent) to puerperal phlegmasia alba dolens, embolus, sudden death. Of the 566 deaths after the last trimester was reached, 187 (33 per cent) were due to puerperal septicemia, 184 (33 per cent) to puerperal albuminuria and convulsions, 81 (14 per cent) to puerperal hemorrhage, 72 (13 per cent) to other accidents of labor, 20 (4 per cent) to puerperal phlegmasia alba dolens, embolus, sudden death, and 2 to causes following childbirth not otherwise defined.

### Abortion

Information concerning abortion (that is, the termination of a previable uterine pregnancy) was obtained for all except 1 of the 767 women who died from puerperal causes in the two years. Abortion preceded the deaths of 143 (19 per cent) of these women. These 143 deaths included 48 (6 per cent) following abortions said to have been spontaneous, 61 (8 per cent) following induced abortions and 10 (1 per cent) following therapeutic abortions; 24 (3 per cent) followed abortions of unreported type.

The 61 induced abortions include self-induced abortions and abortions that probably had been induced by some other person (criminal). Deaths shown on the death certificate to be due to criminal abortions are not included in the census classification, "Death from puerperal causes," and hence were not included in this study.[3] Abortions not certified as criminal were not excluded from this study, even though the attending physician was convinced that they were criminal, as in many cases it was impossible to determine whether the abortion was self-induced or criminal.

Of the 138 urban white deaths 41 (30 per cent) followed abortion; of the 138 urban colored deaths 33 (24 per cent) followed abortion. Forty-one (14 per cent) of the 288 rural white deaths and 28 (14 per cent) of the 202 rural colored deaths followed abortion. The percentage of induced abortions was higher among women who died in the urban than in the rural areas and higher among white than among colored women; but the percentage of deaths due to spontaneous abortion was higher among the colored women.

In Virginia in 1927 and 1928 there were 12 deaths of women following abortion to every 10,000 live births, as compared with a rate of 16 in the group of 15 States studied. Only two (Wisconsin and Minnesota) of the other States studied had lower rates, and one other (New Hampshire) had the same rate. The urban rate in Virginia was 29, however, as compared with an urban rate of 22 in the 15 States. The rural rate in Virginia was 8, as compared with a rural rate of 12 in the 15 States. The rate in the State for white women was 10 and for colored women 18, lower in both cases than the corresponding rates (15 and 21) for the 15 States.

Eighteen of the 143 women who died following abortions were single and 125 were married. The proportion of abortions that were induced was larger among the single women, than among the married women, 13 being induced, 3 spontaneous, and 1 therapeutic; the type of 1 was not reported. Of the 125 abortions among the married women 48 were induced, 45 spontaneous, and 9 therapeutic; the type of 23 was not reported.

Thirty-eight of the 143 women were primiparae and 101 were multiparae; the parity of 4 was not reported. Of the 38 abortions among primiparae 9 were spontaneous, 4 therapeutic, and 22 induced; the type of 3 was not reported; of the 101 among multiparae, 37 were spontaneous, 6 were therapeutic, and 38 induced; 20 were of unreported type.

Sixty-two of the 143 women were said to have had a curettage and 77 had no curettage; for 4 there was no report on this matter. Forty-four of the 62 women who had curettage, including 21 who had induced abortions, had fever before the curettage.

Puerperal septicemia caused the deaths of 109 of the 143 women who died following abortion. Their deaths constituted 36 per cent of all the deaths from puerperal septicemia in the State, and included 54 (18 per cent) following induced abortion, 31 (10 per cent) following spontaneous abortion, and 1 following therapeutic abortion; 23 (8 per cent) followed abortion of unreported type.

3. Deaths from criminal abortion are classified according to the International List of Causes of Death as due to homicide. The Bureau of the Census does not publish their number as it is manifestly incomplete, because some of these deaths are undoubtedly registered as due to other causes.

### Ectopic Gestation

The deaths of 32 women were associated with ectopic gestation—13 in urban areas and 19 in rural areas, 15 white and 17 colored. All but two of these (both urban colored) died before the last trimester. Fifteen had had laparotomies, all but 1 before the last trimester. Another woman who had an 8-month abdominal pregnancy had had several attempts made to induce labor mechanically, and her condition was diagnosed when an attempt was made to deliver her by post-mortem section.

### Live Births and Stillbirths

The result of the pregnancy was reported for 760 of the 767 women who died. Of the 760 women, 323 gave birth to single living children, 9 to live-born twins, and 2 to one live child and one stillborn of twins. Beside these 2 cases of stillbirth accompanying livebirth, stillbirths of more than 7 months' gestation resulted from 167 of the single pregnancies and 3 of the plural pregnancies; 173 women gave birth to previable children, and 83 died undelivered. Therefore these 767 pregnancies fatal to the mother resulted, so far as is known, in only 343 living children, and some of these probably died soon after birth.

### Prenatal Care

It is generally agreed that through prenatal care the physician is able to surround pregnancy and childbirth with many safeguards that would otherwise be impossible. It was of particular interest to find out how many of the 767 women who died had had that advantage.

The 91 cases of induced abortion and cases in which pregnancy terminated before the third month were for obvious reasons excluded from the group for which prenatal care was studied, the phrase "prenatal care inapplicable" being used to describe them. In 49 cases no report on prenatal care could be obtained. The group for which prenatal care was studied consists, therefore, of 627 women.

Of these 627 women 377 (60 per cent) had no prenatal care whatever.

For the purposes of further study the care received by the 250 women who had had some medical supervision during their pregnancy was divided into grades as follows:

Grade I (good): Prenatal care consisting of at least (1) a general physical examination, including examination of heart, lungs, and abdomen; (2) pelvic measurements, external and internal, except in pregnancies terminating before the eighth month and for multiparae who had had a previous normal delivery; and (3) regular monthly visits to a physician beginning with or before the fifth month, with examination of urine and blood pressure at each visit. Only 33 (5 per cent) of the 627 women had had this grade of care, and as 10 of them died before reaching the last trimester, these 10 probably sought a physician because of troublesome symptoms. Two of the 33 apparently had had adequate care as described in Standards of Prenatal Care[1] for which visits beginning in the second month, a Wassermann test, and pelvic measurements are also required.

1. Standards of Prenatal Care; an outline for the use of physicians, U. S. Children's Bureau Publication No. 153. Washington, 1925.

Grade II (indifferent): Prenatal care consisting of at least (1) a general physical examination, including examination of heart, lungs, and abdomen; and (2) regular monthly visits to a physician beginning not later than the seventh month, with examination of urine and blood pressure at each visit. Thirty-three (5 per cent) of the 627 women had had this grade of care.

Grade III (poor): Prenatal care not meeting the requirements of Grade II. It may have consisted of only a single visit or may have been care of good quality beginning in the eighth or ninth month. Of the 627 women 181 (29 per cent) had had this grade of care. Therefore, of the 627 women who died and concerning whom prenatal care could be studied, 558 (89 per cent) had had very inadequate prenatal care or none at all. Evidently more education along these lines is needed.

Three women had had some prenatal care, but sufficient information to grade it could not be obtained.

Table 5 shows the grade of prenatal care and period of gestation of these women. Table 6 shows the grades for white and colored women in the urban and rural areas.

Only 53 women of the 250 women who had had some prenatal care had had a Wassermann test; 53 had had pelvic measurements (18 of these probably had had external measurements only) and 161 had had at least one blood-pressure examination.

Table 5

*Grade of prenatal care for women dying from puerperal causes at less than seven months and at seven or more months' gestation in Virginia: 1927 and 1928.*

| Grade of Prenatal Care | Women Dying From Puerperal Causes | | | |
|---|---|---|---|---|
| | Total | Period of Gestation | | |
| | | Less Than Seven Months | Seven or More Months | Not Reported |
| Total | 767 | 200 | 566 | 1 |
| Grade I | 33 | 10 | 23 | ..... |
| Grade II | 33 | 6 | 27 | ..... |
| Grade III | 181 | 18 | 163 | ..... |
| Ungraded | 3 | ..... | 3 | ..... |
| None | 377 | 61 | 316 | ..... |
| Not reported | 49 | 14 | 34 | 1 |
| Inapplicable* | 91 | 91 | ..... | ..... |

*Induced abortions and cases in which pregnancy terminated before the third month.

The type of prenatal care that can be given depends upon the promptness with which the pregnant woman presents herself to a physician. Of the 250 women who had some prenatal care, 101 first visited the physician in or before the fifth month, so they were seen early enough to be given Grade I care, if the other requirements had been met. Thirty-three of these received Grade I care, 12 received Grade II care, and 55 received Grade III care; the care received by one woman could not be graded. Sixty-eight women made the first visit in the sixth or seventh month; 21 of them received Grade II care and 47 received Grade III care.

The women who died in the cities had received more and better prenatal care than those who died in the rural areas; the same was true of the white women who died as compared with the colored women.

### Operative Delivery

Some report concerning the method of delivery was obtained for all but 3 of the 767 women who died from puerperal causes in the two years. Of these 764 women, 280 (37 per cent) had had an operative delivery, that is, an operation for the removal of the fetus or for the immediate removal of the membranes. When the women concerning whom there was no report as to the method of delivery are excluded, it appears that 117 (43 per cent) of the 275 women who died in the urban areas and 163 (33 per cent) of the 489 who died in the rural areas, also 163 (38 per cent) of the 426 white women, and 117 (35 per cent) of the 338 colored women, had had operations for delivery.

Fifteen women had laparotomies for ectopic gestation, 12 in the first trimester, 2 in the first or second trimester, and 1 in the last trimester.

Ten women had had therapeutic abortion, 3 in the first and 7 in the second trimester.

All but 3 of the remaining 255 operations were performed in the last trimester; 2 Cesarean sections and 1 dilatation of the cervix were done shortly before the last trimester. These 252 women constituted 45 per cent of the 564 who died in the last trimester for whom a report on operations was obtained.

Podalic version was the principal obstetric operation in 92 cases. These included 39 in which version followed dilatation of the cervix (manually, by bag, or by some other mechanical means); 4 cases of version followed by manual removal of the placenta, and 9 cases in which version was accompanied by both dilatation of the cervix and manual removal. In 10 of these 92 cases version followed failed forceps, and in 5 cases version was used with forceps on the aftercoming head. In 2 cases, in addition to the 92, one twin was delivered by version, the other by forceps.

The use of forceps was the principal operation in 74 cases. In 27 of these cases the use of forceps was preceded by artificial dilatation of the cervix (manually, by bag, or by other means), in 2 cases it was followed by manual removal of the placenta, and in 1 case it was accompanied by both of these operations.

Fifty-one women, including 2 in the second trimester, were delivered by Cesarean section, 7 of them after attempts at some other form of operative delivery. The 49 who were delivered in the last trimester constituted 9 per cent of the 564 women who died after reaching the last trimester, and for whom there was a report on operations for delivery as compared with 11 per cent of the corresponding group in the 15 States studied as a whole.

In 6 cases craniotomy or embryotomy followed attempts at some other method of delivery. In 4 cases delivery was by breech extraction, in 1 case following manual dilatation of the cervix. In 1 case "gloved fingers were used as forceps" for a manual extraction of the child. In 9 cases artificial dilatation of the cervix, and in 1 case the conversion of a face presentation to a vertex presentation (by midwife), were followed by spontaneous delivery; in 11 cases spontaneous delivery was followed by

TABLE 6

*Grade of prenatal care for white and colored women dying from puerperal causes in urban and rural areas of Virginia: 1927 and 1928*

| GRADE OF PRENATAL CARE AND COLOR | WOMEN DYING FROM PUERPERAL CAUSES | | | | | |
|---|---|---|---|---|---|---|
| | Total | | Urban | | Rural | |
| | Number | Per Cent Distribution | Number | Per Cent Distribution | Number | Per Cent Distribution |
| Total | 767 | ..... | 276 | ..... | 491 | ..... |
| Grade reported | 627 | 100 | 198 | 100 | 429 | 100 |
| Grade I | 33 | 5 | 18 | 9 | 15 | 3 |
| Grade II | 33 | 5 | 14 | 7 | 19 | 4 |
| Grade III | 181 | 29 | 72 | 36 | 109 | 25 |
| Ungraded | 3 | * | 1 | 1 | 2 | * |
| None | 377 | 60 | 93 | 47 | 284 | 66 |
| Grade not reported | 49 | ..... | 31 | ..... | 18 | ..... |
| Inapplicable† | 91 | ..... | 47 | ..... | 44 | ..... |
| White | 426 | ..... | 138 | ..... | 288 | ..... |
| Grade reported | 343 | 100 | 95 | 100 | 248 | 100 |
| Grade I | 29 | 8 | 15 | 16 | 14 | 6 |
| Grade II | 26 | 8 | 12 | 13 | 14 | 6 |
| Grade III | 113 | 33 | 38 | 40 | 75 | 30 |
| Ungraded | 2 | 1 | ..... | ..... | 2 | 1 |
| None | 173 | 50 | 30 | 32 | 143 | 58 |
| Grade not reported | 22 | ..... | 11 | ..... | 11 | ..... |
| Inapplicable† | 61 | ..... | 32 | ..... | 29 | ..... |
| Colored | 341 | ..... | 138 | ..... | 203 | ..... |
| Grade reported | 284 | 100 | 103 | 100 | 181 | 100 |
| Grade I | 4 | 1 | 3 | 3 | 1 | 1 |
| Grade II | 7 | 2 | 2 | 2 | 5 | 3 |
| Grade III | 68 | 24 | 34 | 33 | 34 | 19 |
| Ungraded | 1 | * | 1 | 1 | ..... | ..... |
| None | 204 | 72 | 63 | 61 | 141 | 78 |
| Grade not reported | 27 | ..... | 20 | ..... | 7 | ..... |
| Inapplicable† | 30 | ..... | 15 | ..... | 15 | ..... |

*Less than one percent.
†Induced abortions and cases in which pregnancy terminated before third month.

manual removal of the placenta; in 1 case spontaneous delivery was accompanied by bag dilatation of the cervix and manual removal of the placenta. In 2 cases the type of operation was not reported.

Artificial termination of the second stage of labor in the last trimester was involved in 225 of these operations for delivery. There was a report as to the prenatal care given to 216 of these 225 women. Twelve of them had had good care (Grade I); 19 had had indifferent care (Grade II); 68 had poor care (Grade III); one had had some care that could not be graded; and 116 had no prenatal care. A report on pelvic measurements was obtained for 97 of the 100 who had had some prenatal care. Sixty of these 97 had not been measured, 25 had had both internal and external measurements, and 12 had probably had external measurement only.

### ATTENDANT AT CONFINEMENT

The attendant at confinement was studied only for the 566 women who had reached the last trimester of pregnancy. Of these 566 women, 446 had been attended by a physician (including a few interns and medical students), but the physician had been preceded in seventy-eight cases by a midwife and in six cases by some other nonmedical attendant, such as a member of the family. In eighty-three cases a midwife was the only attendant at the confinement, and in fifteen cases there was some other nonmedical attendant; twenty-two women were said to have been unattended at the time of delivery (or at the time of death if they died undelivered).

Midwives therefore had attended at confinement 161 (28 per cent) of the 566 women who died of puerperal causes after reaching the last trimester of pregnancy. This includes the seventy-eight for whom a physician was called in to complete the delivery. Physicians, interns, and medical students attended 362 (64 per cent); forty-three (8 per cent) were attended by some nonmedical person (in six cases followed by a physician) or were unattended. During the same two years, according to the bureau of vital sta-

tistics of the State Department of Health, physicians reported 78,063 (69 per cent), midwives 33,282 (30 per cent), and others 1,368 (1 per cent) of the 112,713 live births.

Physicians reported 67,683 (86 per cent) of the 78,731 white live births and midwives reported 10,567 (13 per cent). Physicians had attended 248 (78 per cent) of the 318 white women who died after reaching the last trimester of pregnancy and midwives had attended forty-nine (15 per cent). Ten (3 per cent) had had some other attendant (in three cases followed by a physician) and eleven (3 per cent) had been unattended.

Physicians reported 10,380 (31 per cent) of the colored live births and midwives reported 22,713 (68 per cent). Physicians had attended 114 (46 per cent) of the 248 colored women who died in the last trimester of pregnancy, and midwives had attended 112 (45 per cent); eleven (4 per cent) had had other attendants (in three cases followed by a physician), and eleven had been unattended at confinement.

Of the 248 white women who died after physician's attendance seventy-seven (31 per cent) died of puerperal septicemia, seventy-three (29 per cent) of puerperal albuminuria and convulsions, thirty-five (14 per cent) of puerperal hemorrhage, and the rest of other causes. Of the forty-nine white women who died after midwife attendance, twenty died of puerperal septicemia, twelve of puerperal hemorrhage, and ten of puerperal albuminuria and convulsions.

Of the 114 colored women who died after physicians' attendance, fifty-six (49 per cent) died of albuminuria and convulsions, twenty-seven (24 per cent) of puerperal sepsis, twelve (11 per cent) of puerperal hemorrhage, and the rest of other causes. Of the 112 colored women who died after midwife attendance, fifty-one (46 per cent) died of puerperal sepsis; thirty (27 per cent) of puerperal albuminuria and convulsions, and seventeen (15 per cent) of puerperal hemorrhage.

The large proportion of deaths from puerperal albuminuria and convulsions among the women who died after physicians' care, particularly among the colored women, suggests that the physicians had an unfavorable selection of cases. This is further brought out by the fact that thirty-one of the fifty-two colored women who died of puerperal albuminuria and convulsions after physicians' attendance and for whom there was a report were in coma or in convulsions when first seen by the physicians, and seven were otherwise in poor condition.

### Technique of the Physician

In 374 of the 446 cases in which the woman was attended at confinement by a physician, intern or student (including those following midwives and other nonmedical attendants), the one who actually delivered her, or who was in charge if she died undelivered, described his technique. It was called aseptic in 144 (39 per cent) of the cases, attempted aseptic but under conditions that rendered strict asepsis unlikely in forty-seven (13 per cent), clean but not sterile in 131 (35 per cent), and not clean in fifty-two (14 per cent). However, in forty-eight cases in the first three groups the physician had been preceded by a midwife, and in fifty-five cases he was preceded by another physician whose technique was less careful than his own.

Of the 235 cases of white women attended by physicians, interns, or medical students concerning whom technique was reported, aseptic technique had been used in ninety-five (40 per cent) of the cases, attempted aseptic in thirty-three (14 per cent), clean but not sterile in eighty (34 per cent), and not clean in twenty-seven (11 per cent).

Of the 139 cases of colored women attended by physicians, interns, or students concerning whom technique was reported, aseptic technique was used in forty-nine (35 per cent) of the cases, attempted aseptic in fourteen (10 per cent), clean but not sterile in fifty-one (37 per cent), and not clean in twenty-five (18 per cent).

The physician made vaginal examinations in 287 cases and made no vaginal examinations in 122 cases; in thirty-seven cases there was no report on this matter; and in 120 cases no physician was in attendance. The principal physician had made one vaginal examination in 121 cases, two examinations in forty-nine cases, and three or more examinations in seventy-nine cases; in thirty-eight cases the number of examinations was not given. Rubber gloves were reported used in 182 cases and not used in eighty-three cases; there was no report as to their use in twenty-two of the 287 cases having vaginal examinations.

In cases of seven or more months' gestation, pituitrin was said to have been used before the delivery of the child in seventy-five cases, after the delivery of the child in ninety-five cases, and at an unreported stage in five cases. In 344 cases pituitrin was said not to have been used; in forty-seven cases there was no report as to its use. Pituitrin was used before an artificial termination of labor in the last trimester in forty-two cases and was used in the second stage for two women who died undelivered.

### Hospitalization

Of the 767 women who died of puerperal causes in the two years 363 had been hospitalized and 344 (209 white, 135 colored) died in the hospital. The deaths of 127 (seventy-four white, fifty-three colored) of the 344 women—also of five of the nineteen who left the hospital before death—occurred before the last trimester of pregnancy was reached.

Table 7 shows hospitalization at delivery and place of death among white and colored women dying from puerperal causes after reaching the last trimester and place of death for those who had not reached this period of pregnancy.

Seventy-six of the 132 women who died before reaching the last trimester and who were hospitalized entered the hospital after abortion, at least thirty-four of them a week or more after the abortion. Of the 566 women who died after reaching the last trimester 217 died in hospitals, and fourteen more had been hospitalized but died elsewhere. Of these 231 women 170 (including a few who died undelivered), entered the hospital before delivery. Only forty of these 170 had planned hospitalization; for 126 the hospitalization was emergency; in four cases there was no report on this matter. Sixty-one women entered the hospital after delivery, thirty-nine of them a week or more after delivery.

### Medical Attendance and Accessibility

A report on the matter of medical attendance was obtained for all but three of the 767 women who died of puerperal causes in the two years Of these 764 women twenty-eight (4 per cent) had had no medical attention—so far as was known—in their pregnancy, at confinement, or in the puerperium; sixty-four (8 per cent) were not seen by a physician until they were dying. A report on accessibility was obtained for twenty-two of the twenty-eight who died without medical attention. Nine of the twenty-two lived in the same city or town as a physician. Eight had lived outside the town but less than ten miles from the physician, though in five of the eight cases the roads were very bad. Five were ten or more miles from the physician, two of them having the additional handicap of very bad roads.

TABLE 7

*Number of women dying in hospitals and residence of decedent, and number not dying in hospitals among women dying from puerperal causes in places of specified population in Virginia: 1927 and 1928*

| POPULATION* OF PLACE OF DEATH | WOMEN DYING FROM PUERPERAL CAUSES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Hospital Cases | | | | | Death Not in Hospital | Not Hospital Cases |
| | | Total | Death in Hospital | | | | | |
| | | | Total | Resident | Non-Resident | Residence Not Reported | | |
| Virginia | 767 | 363 | 344 | 177 | 164 | 3 | 19 | 404 |
| 100,000 or more | 139 | 111 | 108 | 83 | 25 | ..... | 3 | 28 |
| Richmond | 76 | 64 | 61 | 46 | 15 | ..... | 3 | 12 |
| Norfolk | 63 | 47 | 47 | 37 | 10 | ..... | ..... | 16 |
| 10,000 to 100,000 | 137 | 113 | 111 | 58 | 52 | 1 | 2 | 24 |
| 2,500 to 10,000 | 72 | 55 | 53 | 13 | 40 | ..... | 2 | 17 |
| Less than 2,500 | 419 | 84 | 72 | 23 | 47 | 2 | 12 | 335 |

*Estimate as of July 1, 1926, made by U. S. Bureau of the Census.

TABLE 8

*Hospitalization at delivery at seven or more months' gestation and place of death for hospital and non-hospital cases among white and colored women dying from puerperal causes at less than seven months and at seven or more months' gestation in Virginia: 1927 and 1928*

| HOSPITALIZATION AT DELIVERY AND PERIOD OF GESTATION | WOMEN DYING FROM PUERPERAL CAUSES | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | White | | | Colored | | |
| | | Total | Death in Hospital | Death Not in Hospital | Total | Death in Hospital | Death Not in Hospital |
| Total | 767 | 426 | 209 | 217 | 341 | 135 | 206 |
| Period of gestation seven or more months | 566 | 318 | 135 | 183 | 248 | 82 | 166 |
| In hospital† | 168 | 102 | 95 | 7 | 66 | 62 | 4 |
| Emergency | 126 | 68 | 65 | 3 | 58 | 56 | 2 |
| Planned | 40 | 33 | 29 | 4 | 7 | 5 | 2 |
| Not reported | 2 | 1 | 1 | ..... | 1 | 1 | ..... |
| Not in hospital | 398 | 216 | 40 | 176 | 182 | 20 | 162 |
| Period of gestation less than seven months | 200 | 108 | 74 | 34 | 92 | 53 | 39 |
| Period of gestation not reported | 1 | ..... | ..... | ..... | 1 | ..... | 1 |

†Includes cases in which there was no issue.

There were in all 158 women who lived ten miles or more and forty-four who had lived twenty-five miles or more from a physician. For 117 of these 158 women there was no other evidence of inaccessibility; three of them died without medical attendance, seven had a physician only when they were dying, and 107 had some care from a physician before they were actually dying. Forty-one of the 158 women who had lived ten or more miles from a physician were on very bad roads or horseback trails; two of them died without medical attention; four had medical attention only when they were dying, and thirty-five had earlier medical attention.

As would be expected, hospitalization was more frequent among the women who died in urban than in rural areas. (Table 8.) Of the 139 women who died in Richmond and Norfolk, 111 (80 per cent) had been hospitalized and 108 (78 per cent) died in hospitals; twenty-five of them were nonresidents. Of the 137 women who died in other cities of 10,000 or more

inhabitants 113 (82 per cent) had been hospitalized; 111, including fifty-two nonresidents, died in hospitals Of the seventy-two women who died in cities of 2,500 but less than 10,000 inhabitants, fifty-five (76 per cent) had been hospitalized and fifty-three (including forty nonresidents), died in hospitals. Of the 419 women who died in places of less than 2,500 inhabitants, eighty-four (20 per cent) had been hospitalized and seventy-two died in hospitals; forty-seven of the seventy-two were known to be nonresidents. Of the 219 women who died in hospitals in the urban areas 133 had reached the last trimester of pregnancy, ninety-eight of whom (74 per cent) entered the hospital before delivery, seventy-four of these ninety-eight as emergency cases. Of the 125 women who died in hospitals in the rural areas eighty-four had reached the last trimester, fifty-nine of whom (70 per cent) entered the hospital before delivery, forty-seven of them as emergency cases.

Sixty-four women who were delivered in hospitals died of sepsis. In thirty-five of these cases the sepsis was said to have been developed in the hospital.

Nineteen women died in hospitals not registered by the American Medical Association.

### Illegitimacy

The deaths of ninety-six unmarried mothers were assigned to puerperal causes in the two years. Seventeen of these women were white, seventy-nine were colored. Forty-nine women (seven white, forty-two colored), died in the urban areas; forty-seven (ten white, thirty-seven colored), in the rural areas. Eighteen of these ninety-six women died following abortions.

### Summary

The 783 deaths assigned to puerperal causes in Virginia in 1927 and 1928 were studied by personal interviews with the attending physicians or midwives. Sixteen were found to be not actually puerperal according to the International List of Causes of Death and hence were omitted from the detailed study, but it is probable that at least that many deaths that were actually puerperal were omitted from consideration on account of having been registered as due to other causes.

Of the 767 deaths studied in detail, 40 per cent were due to puerperal septicemia, 28 per cent to puerperal albuminuria and convulsions, 11 per cent to puerperal hemorrhage, 9 per cent to other accidents of labor, 9 per cent to accidents of pregnancy, and 3 per cent to puerperal phlegmasia alba dolens, embolus, sudden deaths.

Twenty-six per cent of the deaths occurred before the last trimester of pregnancy was reached. Puerperal septicemia caused 59 per cent of the deaths in this period and 33 per cent of the deaths after last trimester was reached. Puerperal albuminuria and convulsions caused 16 per cent of the deaths of the earlier period and 33 per cent of the deaths of the later period.

Abortion (that is, the termination of a previable uterine pregnancy) preceded 19 per cent of the puerperal deaths and 36 per cent of the deaths from puerperal septicemia. At least 8 per cent of the puerperal deaths and 18 per cent of the deaths from puerperal septicemia followed induced abortions other than therapeutic.

Forty-four per cent of the women had given birth to living children, 23 per cent to stillborn children, and 23 per cent to previable children; 11 per cent died undelivered.

Prenatal care was studied in the 627 cases that remained after exclusion of the cases of induced abortion, cases of pregnancies of only 2 months' duration or less, and cases in which no information as to prenatal care could be obtained. Of those 627 women, 60 per cent had had no prenatal care, 29 per cent had had very inadequate care, 5 per cent had had indifferent care, and 5 per cent had had good care.

Forty-five per cent of the women who died after reaching the last trimester of pregnancy had had operative deliveries.

Fifteen per cent of the women who died after reaching the last trimester had been attended at confinement by a midwife only, 14 per cent had been attended by a midwife followed by a physician, and 7 per cent were unattended or had as attendant only some nonmedical attendant other than a midwife. The remainder were attended by physicians.

Forty-seven per cent of the women who died of puerperal causes in the State had been hospitalized. Eighty per cent of the women who died in cities of 100,000 or more inhabitants (Richmond and Norfolk), 82 per cent of the women who died in the other cities of 10,000 or more inhabitants, 76 per cent of those who died in cities of 2,500 but less than 10,000 inhabitants, and 20 per cent of the women who died in the rural areas had been hospitalized.

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka St., Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Ave, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 S. Market St., Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Ave., Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Ave., Richmond.

## News From Local Auxiliaries.

### Elizabeth City County Auxiliary

The Woman's Auxiliary to the Elizabeth City County Medical Society held its second meeting on Saturday, May 27th, at the home of the president, Mrs. J. J. Cullinan, Hampton, the first meeting having been a joint organization meeting with the Warwick County Auxiliary in April.

The attendance was small due to the fact that there are few women eligible, but those present manifested keen interest in the auxiliary. Mrs. W. L. Harris, President of the State Organization, and Mrs. M. N. King, one of the vice-presidents, both of Norfolk, were present. They discussed the function and work of the new auxiliary and suggested various projects to be undertaken later.

Communications were read from Mrs. Joseph Bear, President-elect of Richmond, and from

Mrs. W. T. Sanger, Chairman of Press and Publicity, also of Richmond.

The main business of the day was the discussion on the advisability of remaining a very small separate unit or joining another group. It was decided that the Elizabeth City County group should become members-at-large of the State organization and affiliate with the Warwick County Auxiliary. It will thus be possible for the small group here to carry on its own project acting as a committee of the Warwick County Auxiliary and at the same time not losing its individuality as a group. The mutual benefit of this plan is evident.

An informal luncheon was served at the conclusion of the meeting, after which the group attended the benefit bridge party of the Warwick County Auxiliary in Newport News.

Ruth McLean Wright,
(Mrs. Robert H. Wright),
*Secretary.*

Richmond Academy of Medicine Auxiliary

From the Richmond Auxiliary comes a resumé of the year's work as follows:

We have cooperated in promoting the early diagnosis tuberculosis campaign, furnishing for this a motor corps to bring patients to the clinics, and clerical assistance in taking the history on cases. We cooperated with the local Woman's Club in an attractive, well-attended, Child Welfare Conference, which lasted several days. Many of our doctors and several auxiliary members were on the program. Before the new home of the Richmond Academy of Medicine was opened in the Fall we raised funds to furnish the room in which the famous Miller collection of old medical books, prints, silhouettes, and curios are housed. Soon after this room was furnished we served as hostesses to several hundred wives of different doctors during the meeting of the State society in Richmond.

Money was contributed for a milk fund for twenty undernourished children in the public schools of Richmond.

We served luncheon to nearly a hundred five-point school children who were given a trip to Richmond—one from each county—as a reward for their superior physical fitness.

At a card party at the Country Club in May, we raised more than a hundred dollars which will be used for the various activities of the Auxiliary.

A donation of fifteen dollars was made in the campaign for the Negro recreational center of Richmond.

With Mrs. Stuart McGuire as general chairman, we are concentrating our efforts now upon plans for the entertaining of the Southern Medical Association which will meet in Richmond in the Fall. We very much need the interest and assistance of every doctor's wife in Virginia for this unusual demand upon us as hostesses.

# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted:

Lederle Laboratories, Inc.
- Ampules Glucose (U. S. P. Dextrose) Solution—Lederle, 20 c.c.
- Ampules Glucose (U. S. P. Dextrose) Solution—Lederle, 50 c.c.
- Ampules Glucose (U. S. P. Dextrose) Solution—Lederle, 100 c.c.

Parke, Davis & Co.
- Antipneumococcic Serum (Felton) Type I.
- Erysipelas Streptococcus Antitoxin Refined and Concentrated—P. D. & Co., 20 c.c. syringe package.
- Sal-Ethyl Carbonate.
  - Tablets Sal-Ethyl Carbonate, 1 gr.
  - Tablets Sal-Ethyl Carbonate, 5 grs.
  - Tablets Sal-Ethyl Carbonate with Amidopyrine.

### New and Nonofficial Remedies

The following are some of the products which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Chlorbutanol (Hydrous)—Merck.—A brand of chlorbutanol—N. N. R. (New and Nonofficial Remedies, 1933, p. 137) containing one molecule of water in two of chlorbutanol. It is used in the preparation of aqueous solutions. Merck & Co., Inc., Rahway, N. J.

Chlorbutanol (Anhydrous)—Merck.—A brand of chlorbutanol—N. N. R. (New and Nonofficial Remedies, 1933, p. 137) for use in the preparation of oil solutions. Merck & Co., Inc., Rahway, N. J.

Neocinchophen—Merck.—A brand of neocinchophen—N. N. R. (New and Nonofficial Remedies, 1933, p. 141). Merck & Co., Inc., Rahway, N. J. (Jour. A. M. A., May 27, 1933, p. 1685.)

### Propaganda for Reform

Bacteriophage Therapy.—The early hopes of bacteriophage therapy have hardly been realized. In spite of much experimentation, which has shown why bacteriophage could not function therapeutically, at least as a specific agent pitted against a specific infection, clinical observations have been accumulating which indicate that intravenous injection of bacteriophage may have beneficial effects. The material labeled "bacteriophage" which the clinician injects into a patient with severe septicemia is obtained by first growing the particular bacterium on a broth medium and then introducing bacteriophage into the turbid culture. After further incubation the material becomes entirely clear, showing that the bacteria have been dissolved and killed by the bac-

teriophage, the concentration of which has increased sufficiently to cause bacterial disintegration. Obviously, such a bacteriophage solution is not a simple solution or suspension of bacteriophage. These disintegrated cultures of bacteria may therefore be considered supervaccines containing all the chemical constituents of the bacterial. Larkum has advocated, in general, the use of lysed bacterial cultures instead of the ordinary vaccine as being much more effective. Though the use of bacteriophage as a specific agent has been disappointing, it may yet yield important results by showing how more effective vaccines may be prepared. (Jour. A. M. A., May 6, 1933, p. 1431.)

Vitamin D and Well-being.—New problems in relation to the possible function of vitamin D in promoting bodily welfare continue to arise, despite the commendable progress of recent years. One concerns the uncertainty of the need of supplementing the diet with added vitamin D if it is liberally supplied with the appropriate mineral constituents, notably calcium and phosphorus. In new studies on animals that were subjected over long periods to extreme calcium deprivation, Templin and Steenbock, of the University of Wisconsin, found that the introduction of moderate amounts of vitamin D into the calcium-deficient ration provided considerable protection from mineral losses in a parallel series of rats. The results tend to support the impression of the value of vitamin D as a food constituent for the adult. The Wisconsin biochemists frankly insist that it is unwarranted to expect that vitamin D administered in any amount should be able to compensate fully for an extreme lack of calcium or other dietary essentials. As the basal diet was not optimal with respect to protein or phosphorus content, it is possible that the favorable effects of vitamin D on calcium conservation might have been accentuated if the diet had been improved in these respects also. This is equivalent to the much needed reminder that vitamins are by no means the sole essentials for a healthful diet. (Jour. A. M. A., May 27, 1933, p. 1692.)

# Book Announcements

**The Clinical Aspect of Chronic Poisoning by Aluminium and Its Alloys.** By LEO SPIRA, M. D. With a Foreword by PROF. DR. HANS HORST MEYER. London. John Bale, Sons & Daniellson, Ltd. 1933. Pamphlet of 28 pages. Price, 2 shillings sixpence.

After somewhat of an interlude in a dispute which has taken on a rather acrimonious character the author of this twenty-eight paged pamphlet cites the symptom complex observed on a group of patients including himself, while in the throes of poisoning, presumably resulting from the ingestion of food cooked or stored in aluminum utensils. Chlorinated and aluminized tap water are also exposed as potential sources for "irritants" capable of also causing the same triad of symptomatology listed below.

The author divides this malady into three groups: Gastro-intestinal cutaneous, and general. In the first group is listed as a cardinal sign constipation, accompanied by flatulence and colicky pains "of such severity as in some cases to suggest the possibility of gastric or duodenal ulcer, cholelithiasis, nephrolithiasis, colitis, or even "acute abdomen," and resistance of the abdominal walls associated with tympanites appears to be extremely common." The victims of the necessarily ubiquitous disease further complain of dryness in the mouth and throat, anorexia, nausea and vomiting, involvement of the tongue, stomatitis, and a gingivitis not unlike alveolar pyorrhea. The cutaneous manifestations run the gauntlet of dermatological terminology and are accounted for by the author as being secondary to the gastro-intestinal involvements. The general group in this "symptom complex" includes neuralgia, twitching of the leg (these two phenomena appearing at night and frequently with such gusto as to alarm the patient), paraesthesias, arthralgia, vertigo, excessive perspiration, albuminuria, hypotension, mental depression, and general malaise.

Seven clinical cases, including his own, are reported in which one or more of the above symptoms were present, and in which complete cure was obtained by eliminating the sources of intoxication and mentioned above, and by the administration of charcoal and aperients.

The last half or more of this monograph is devoted to the various agents in aluminum utensils which might be etiological factors in chronic aluminum poisoning. In this discussion the work of several investigators is cited, both pro and con. Besides aluminum itself, fluorine, silica, ferro-silicon, arsenic, antimony, and petroleum derivatives, as contaminants of commercial aluminum, are mentioned as potent partners in the production of this twentieth century octopus, aluminum sickness.

As an afterthought, Dr. Spira closes with a paragraph of opinions in which he expands the symptomatology of aluminum poisoning sufficiently enough to include diverticulosis of the colon, and carcinoma of the gastro-intestinal tract.

The paper is opened by a foreword by Professor Hans H. Meyer, of Vienna, and contains about eighty-six references in its bibliography.

Modern texts upon pharmacology belittle the possibility of aluminum poisoning as a result of eating food cooked in utensils made of this material. However, such work as this might

well stimulate further observation along these lines to the end that this tremendously important problem be settled once and for all.

H. B. Haag, M. D.

**Diet in Sinus Infections and Colds.** By EGON V. ULLMANN, M. D., formerly Special Lecturer for Biology at the Oregon State College; Instructor at the First Medical Clinic at the University of Vienna, etc. Recipes and Menus by Elza Mez. New York. The Macmillan Company. 1933. 12mo of 166 pages. Cloth. Price, $2.00.

Sinus disease, actual or imagined, is one of the most popular of illnesses. Add to this fact the recent fad for dieting and the conditions are met for a large public appeal in a book bearing the above title.

The book attempts to give the layman first, a knowledge of the anatomy, physiology and pathology of the nose. A discussion in general of dietary principles follows. Then in great detail the dietetic treatment of colds and sinus disease, according to the author's ideas, is considered.

An appendix containing recipes from "soup to nuts" is supplied, so that the reader may put into practical application the theories of the author.

The thesis is that sinusitis and colds can be prevented and cured (though the necessity of surgical treatment in some cases is not denied) by a dietary regime.

A quotation will summarize the purposes: "The diet is directed to counteract acidosis, to increase the effect of calcium in the system, and to prevent eventual lack of vitamins."

The layman will have considerable difficulty in understanding the text, as the discussion is technical. Moreover, the diet seems to be as complicated in its management as that for diabetes.

A book that categorically states that "the paranasal sinuses form the resonance box for the voice" could lead one to wonder whether other statements were also unsupported by facts. Another assertion that causes doubt is "blackberries produce perspiration and dissolve mucus."

Perhaps diet has a part in the prevention and cure of colds and sinus disease, but this book falls far short of advancing the status of this theory.

Emanuel U. Wallerstein, M. D.

**Senile Cataract: Methods of Operating.** By W. A. FISHER, M. D., F. A. C. S., Chicago, Ill. With the collaboration of Prof. E. Fuchs, Prof. I. Barraquer, Dr. H. T. Holland, Dr. John Westley Wright, Dr. A. Van Lint, and Dr. O. B. Nugent. 267 pages, 183 illustrations, 112 of which are colored. Published by Chicago Eye, Ear, Nose and Throat College, Chicago, Ill. 1933. Cloth. Price, $1.00.

This little volume, now in its second edition, covers the subject completely. Various chapters are by the most outstanding men in the world.

The illustrations are profuse and give an adequate idea of the steps in any operation. The method of choice by all the authors of this book is intracapsular operation.

In spite of the experiences in India, we, in this country, could wish that a little more emphasis were placed upon elimination of foci of infection in preparing patient for operation.

Chapter VII, "A Method of Acquiring Technic," is of great importance. The entire work is well worth the study and consideration of anyone who is interested in this type of work.

Clifton M. Miller, M. D.

**A Study of Masturbation and the Psychosexual Life.** By JOHN F. W. MEAGHER, M. D., F. A. C. P., Neurologist to St. Mary's Hospital, Brooklyn; Neurologist to the Mary Immaculate Hospital, Jamaica, etc. Second Edition. New York. William Wood and Company. Octavo of 130 pages. Cloth.

Masturbation is a habit which gives parents and others who have the care and training of children great concern. Unwise treatment may give rise to lasting damage to the personality of the patient. For this reason many will welcome the circulation of this book, now in its second edition.

The author states in the introduction the purpose of the book:

"A scientific realization of the significance of masturbation in youth by the general medical practitioner should soon be followed by a similar appreciation by parents, clergymen and teachers, of its place in development. Only by a wide diffusion of this special knowledge will we be able to successfully limit those problems which arise as a result of sex conflicts and maladjustments. And then when the intelligent public are better informed, they will assist in preventing a great deal of the unnecessary neurotic manifestations, which today are all too common, not only in youth, but in many adults as well.

"We see many evidences of the present-day interest in this and allied subjects on the part of progressive medical men, and this is in great contrast to the neglect with which the whole psychosexual life was treated only a generation ago."

As the title indicates, the book is more than a study of masturbation. It is likewise a contribution to the viewpoint held by most men of scientific training as contrasted with the old ideas about sex, which are, unfortunately, still too widely held.

In the first half of the book, the author gives a simple and concise resumé of the psychosexual life of the individual. In the second half there follows a discussion of masturbation, its causes, prevalence of the habit, symptoms and sequelae, and finally a chapter on treatment. While in the main the discussion is scientific and well-founded, there are times when the author is inclined to be moralistic, as, for example, when he stresses good traits, good trends, good wishes, and good incentives. The chapter on treatment is disappointingly weak, especially in its psychotherapeutic suggestions.

The conclusions, as follows, indicate the main theses of the book and present one or more points of controversy:

"1. Infantile masturbation is practically universal; in adolescents it is the rule with boys, and is very common in girls; in adult-hood it is more common in women than in men.

"2. Physiologically, masturbation is not abnormal in young children, but the habit is always abnormal in adults, in whom it shows a psychosexual maldevelopment, or a regressive phenomenon.

"3. The harm resulting from excessive indulgence in the habit is chiefly in the mental and moral spheres, rather than in the physical sphere.

"4. In the adolescent and in the adult, a cure of the habit is easiest where the traits and trends of the individual are predominantly good, where the wish to give up the habit is strong, and where numerous good incentives are actively present.

"5. Sympathy and encouragement are great aids to the patient, whereas an antagonistic attitude, censure, and punishment are usually harmful.

"6. The problem is more often a psychopathological one, than a medical or surgical one."

Some would question the author's state ment, "the habit is always abnormal in adults, etc.." especially in the light of the researches of Drs. Robie, Robinson, Davis, and others.

Although many authorities are cited, no direct quotation is used. This, and the fact that some of the statements attributed to authorities like Healy, for instance, were probably from their earlier works, makes one wish that the most important citations, at least, had been more specific. Dr. Healy, when the writer worked in his clinic in 1927, emphasized the value in treatment of relieving the patient of all feelings of guilt. This non-moralistic attitude of Healy's is not mentioned in this book, nor is the relief of guilt-tension evaluated in the chapter on treatment. Also, Dr. Healy frequently stated that masturbation, *per se*, in his opinion, was never the cause of mental deficiency or any form of nervous and mental disease. In several places the author implies that a contrary opinion is held.

The fact that the book is dedicated to one of the greatest psychonanalysts of today and is written with a psychoanalytic slant should not be allowed to influence the reader against it, because, after all, no other system of therapy gives such convincing explanations of heretofore unexplained mechanisms.

The book should be of especial interest to general practitioners, pediatricians, ministers, educators and social workers.

HARVIE DEJ. COGHILL, M. D.

**Diseases of Tradesmen, by Bernardino Ramazzini (1633-1714), etc.,** compiled by HERMAN GOODMAN, B. S., M. D., New York City, with which is bound **Silk Handlers' Disease of the Skin, etc.,** by HERMAN GOODMAN, B. S., M. D., Medical Lay Press, New York City, 1933.

This little volume should awaken interest in Bernardino Ramazzini, a famous Italian physician, whose career as practitioner and teacher was successfully begun in Medina and gloriously ended in Padua where as successor to Sanctorius he occupied the highest positions in that ancient seat of learning. Ramazzini was the founder of modern sanitary science. The earliest formal treatise on this subject was his *De Morbus Artificum* which first appeared in 1700. Here are described under fifty-eight chapter heads the various occupational diseases —the sciatica and vertigo of potters, the eye disturbances of gilders and printers, the pulmonary diseases of miners and stone masons, as well as the diseases peculiar to midwives, nurses, bakers, fishermen, grooms, wrestlers and learned men. Dr. Goodman, besides presenting us with brief abstracts of each of these chapters includes in his publication an interesting engraving of Ramazzini and an entertaining account of his life. He has appended an original account of *Silk Handlers' Disease of the Skin* which for obvious reasons might more appropriately have been published separately.

W. B. BLANTON, M. D.

**The National Society for the Prevention of Blindness.** The Challenge of Ophthalmologic Problems—Do We Meet Them?; History and Development of Sight-Saving Classes in the United States; and Social Service with Eye Patients. Pamphlets published by the National Society for the Prevention of Blindness, 450 Seventh Ave., New York City. These range in prices from 5c to 15c.

**The Wellcome Research Institution and the Affiliated Research Laboratories and Museums Founded by Sir Henry Wellcome, LL.D., F. R. S.** London, England. Exhibits at the Chicago Exposition. 1933. 12mo of 62 pages. Illustrated. Cloth.

# Virginia Medical Monthly

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# Editorial

## Maternal Mortality in Virginia in 1927 and 1928.

Anything that throws light upon the important subject of maternal mortality should be of great interest to the medical profession. When that information comes from a careful study of the conditions surrounding the maternal deaths in the State of Virginia it should be studied by every physician in the State and the lessons learned put into practice to the end that our women may deliver with less danger.

The paper appearing in this issue under the title "Maternal Morbidity in Virginia in 1927-1928" should be read by every doctor in the State and then laid aside for further study and ready reference because it is quite impossible to digest the many important facts in one reading.

This statistical study was made at the request of the Medical Society of Virginia by Dr. J. Shelton Horsley, then its president, and of the State Board of Health by the late Dr. Ennion G. Williams.

No attempt will be made to thoroughly analyze this paper but rather to comment upon some of the outstanding features and to try to arouse sufficient interest in the subject so that the article will be read.

### Plan of Study

It was found that 783 deaths during 1927 and 1928 could be attributed to the puerperal state, according to the International List of Causes of Death.

Copies of the birth and death certificates of the 783 cases were obtained from the Bureau of Vital Statistics.

The physicians and the midwives who attended the cases were interviewed personally by physicians on the staff of the Children's Bureau of the United States and, where the patient died in the hospital, the charts were carefully examined after consent of the physician in charge of the case.

Many of us remember how courteously and carefully the cases were investigated and feel sure that the report is as accurate as it is humanly possible to make it.

The study revealed that sixteen of the cases had been wrongly classified and were deleted from the report except in tables Nos. 1 and 2. Seventy-eight cases were reclassified within the puerperal group itself.

### Urban and Rural

A very interesting grouping of the statistics is to be found in Tables Nos. 1 and 1A.

Here the statistics are broken up into the comparison between total urban and rural deaths, comparing Virginia with the total birth registration area of the United States, in which our urban statistics are distinctly unfavorable.

In our urban group are included the ten cities that had ten thousand or more inhabitants in 1920: Alexandria, Charlottesville, Danville, Lynchburg, Newport News, Norfolk, Petersburg, Portsmouth, Richmond, Roanoke. The rest of the state was regarded as rural.

It is interesting to note that the death rate

from all puerperal causes was less in the rural than in the urban sections with the exception of deaths from puerperal hemorrhage, and that was the same.

It must be remembered, however, that cases with hemorrhage cannot be easily transported.

### White and Colored Deaths Compared With Registration Area

Table No. 1A reports the comparison between colored and white deaths in Virginia and the birth registration area of the United States. The Virginia report is definitely lower, particularly in colored deaths.

### Cause of Death

Forty-three per cent of our deaths were as the result of infection including phlegmasia alba dolens, but these statistics include abortions, while 28 per cent were as the result of toxemias with convulsions; hemorrhage accounted for 11 per cent.

### Prenatal Care

Appreciating that prenatal care is one of the most certain ways of reducing maternal mortality and infant mortality, the study of the care that the women had during their pregnancy was very intensive.

The ninety-one cases of induced abortion were excluded from the group and in forty-nine cases no report on prenatal care could be obtained. The group in which prenatal care was studied was therefore 627.

Sixty per cent had no prenatal care.

Five per cent had what was called good prenatal care.

Five per cent had what was designated as indifferent prenatal care.

Twenty-nine per cent had poor prenatal care.

The doctor cannot give good prenatal care unless the woman comes to him. He cannot give her any sort of attention unless she puts herself under his care.

How to get the pregnant woman to the doctor in time for him to be of real service to her is indeed a problem that has engaged the attention of your Maternal Welfare Committee for six years.

The most important single factor is education, particularly of the public, to the fact that pregnancy and labor are safe, as a rule, when made so by the doctor. The next in importance is cooperation between the nurses, visiting and county, and the doctors to the end that every pregnant woman shall see a doctor at least once during her pregnancy.

When the patient and doctor have gotten together in prenatal care, the 28 per cent of deaths from toxemia will be practically wiped out, and, when adequate prenatal care is given, the sepsis rate will be lowered by the elimination of gonorrhea, the planning for the best method of delivery instead of the emergency at the end.

The most important single lesson to be learned from this elaborate report is the fact that 60 per cent of the women who died had no prenatal care. In these cases there was no way by which the doctor could prepare the patient against suffering and death.

### Operative Deliveries

It is interesting to note that 37 per cent of the women that died had operative deliveries. Podalic version was the principal operation in ninety-two cases and forceps was the principal operation in seventy-four. Cesarean section was done in fifty-one.

Let us teachers, obstetricians, general practitioners, medical students, nurses, and Boards of Health all cooperate to make Virginia safer for the pregnant women by at least trying to improve the character of the prenatal work and by making ourselves easily and willingly available to those of the indigent that need our services.

Greer Baughman, M. D.

**Cardiospasm.**

Sturtevant* has done a useful piece of work in bringing to publication a general consideration of cardiospasm. He has defined the condition as one without the exhibition of pain but as one in which food does not pass readily from the esophagus into the stomach. Ultimately, by retention of food, the esophagus undergoes dilatation. Sturtevant recounts the history of this condition in medical publications. He employs the survey of a broad group of writers. He cites some 133 authors in his paper. This is a valuable catalogue of titles touching this subject and may be useful to those desiring to read beyond the author's article.

It would seem that the esophagus needs a wider and a more thorough study by the practitioner. It is an organ heretofore little considered by practitioners. It is one frequently abused and frequently diseased. Spastic conditions of the esophagus have been recognized since 1733. Various important discus-

*Sturtevant—Archives of Internal Medicine, Vol. 51, No. 5, page 714.

sions have been published through the two centuries. A notable collection of cases of esophagus ectasia have been made at and reported upon by the Mayo Clinic, covering the period from 1908 to 1923 during which time 415 patients had been treated.

On the subject of pathogenesis, Sturtevant records various conceptions of a number of authors. There appears to be little unanimity among them. In predisposing factors, one may place psychasthenia, or the psychoneurotic type of patient. Others oppose this idea and affirm that patients with cardiospasm are not usually neurotic in type. Trauma is brought forward as a factor. Fear and psychic "trauma" is stated to be a cause. Sudden anger and fright have seemed to precipitate an attack of cardiospasm. In matters of sex, males predominate. The 2nd, 3rd, and 4th decades seem to be the age of highest incidence. Pathologic changes bring about dilatation. This may be absent or slight in incipiency. The esophagus may become spindle-shaped or club-shaped, and sometimes sausage-shaped. It may be thickened, hypertrophied or inflamed. There may be a warty chronic growth of the mucosa. Round cell infiltration of the submucoca, fatty degeneration inflammation of the muscularis, with pigmentation, may occur in this condition as it becomes chronic. There is more or less chronic esophagitis, says Sturtevant.

While symptoms may begin suddenly, it is more usual for them to appear with a periodicity, gradually increasing in intensity. Citing the division of the cases by Plummer, one notes a first stage in which the cardia intermittently offers resistance to the passage of food: but the food passes. From this condition the patient experiences discomfort, pain, and possibly a choking sensation while taking food. Such patients may say, "My food seems to stick here," but there is no regurgitation of the food at this period. In the second stage, however, the spasm becoming stronger, the food is retained and is later regurgitated from a dilated esophageal zone above the constriction. Continuation of this state, over a period, leads to the symptoms of a third stage which are characterized by discomfort, regurgitation at intervals, occurring at times long after eating. The discomfort is in the chest. Anxiety, cyanosis and cold perspiration, anginal-like pains, mark the course of this stage of the disease. There may be difficulty experienced by the patient in attempting to belch. Food regurgitates but is not sour. Other symptoms are noted by the author, but from the foregoing, diagnostic indications may be established. However, diagnosis by the esophagoscopy in skillful hands offers more conclusive means. Roentgen ray examination of such cases brings a more accurate means of diagnosis to hand.

The wide range of disorders found in practice more or less connected with the stomach makes the rare condition of cardiospasm of interest. This review of the subject by Sturtevant summarizes important data for the reader.

**Primary Duodenal Obstruction with Toxemia.**

In reporting a case, Bargen and Walten* draw attention to an important clinical condition. This case patient was a young woman of fourteen years, who had been vomiting intermittently for three months. She had passed watery, foamy stools which were accompanied by colic. For three years she had suffered acute pain in the lower quadrant of the abdomen. Dietl's crisis had been the diagnosis. Loss of weight had been very great. Tachycardia and edema of the ankles had appeared. Appearance of the patient was one of dehydration and pallor. Trousseau's sign was positive and tetany had been noted. The abdominal wall was thin and flaccid. No parasites, ova, or unusual bacteria, or large amount of fat were found in the stools. The recurring severe attacks of pain in the upper abdomen accompanied by gastric retention, recurrent watery, foamy stools, obscure fever, and periods of complete obstruction in the upper part of the intestine were significant symptoms. The findings by X-ray were interesting. The stomach showed no change and the first portion of the duodenum appeared normal. In the second portion and jejunum there were striking ulcerations. Motility was depressed. Duodenal and jejunal segments required vigorous manipulation. Obstruction thereabouts was suspected. Operation disclosed the entire duodenum, instead of being retroperitoneal, was intraperitoneal. The duodenojejunal angle was to the outer side of the ascending colon, the omentum and ascending mesocolon were adherent to the jejunum and duodenum. Dilatation and obstruction were found.

Duodenojejunostomy was performed. The

*Proceedings of the Staff Meetings of the Mayo Clinic, May 14, 1933.

convalescence was good and after eighteen days the patient left the hospital in good condition. A steady gain of weight was made and a state of good health was gotten. Such a case illustrates the difficulty of diagnosis and the importance of adequate search for the cause of persistent symptoms connected with the digestive tract.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Pediatric Clinics in Local Societies.**

The response to letters addressed by the Chairman and Executive Secretary of the Department of Clinical Education to the larger local and regional societies, offering the cooperation of the Department and of the Pediatric Society of Virginia for the arrangement of programs emphasizing pediatric instruction, has been encouraging. Through their officers, the Medical Society of Northern Virginia and the Clinch Valley Medical Society have asked, and received, the assistance of the Department in suggesting suitable clinicians and in defraying the expense of their travel. The Lynchburg Academy of Medicine has appointed a committee to cooperate in the holding of a pediatric clinic and the Medical Society of Southwestern Virginia has taken the first steps through correspondence to give pediatrics a prominent place in its next program. The Norfolk County Society has reported that it will continue to emphasize pediatric clinics as in the past. The offer of members of the Pediatric Society of Virginia to assist in the arrangement of programs and clinics is supplemented by the desire of the Department of Clinical Education to use its resources for the furthering of this program. Instruction in pediatrics continues to be the outstanding need on the part of the practitioners of Virginia, as revealed by the great majority of the members of the classes in prenatal and postnatal care who wish to have the advantage of additional study in this subject.

R. D. Bates, *Chairman*,
Geo. W. Eutsler, *Executive Secretary*.

**New Circuit of Courses in Prenatal and Postnatal Care.**

Beginning the week of July 10th, Dr. Maxwell E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, will have finished his work in part of Southwestern Virginia and will begin new classes in Tazewell, Lebanon, Bristol, Abingdon and Marion. The advance enrollment for this, the sixth circuit of centers for the study of prenatal and postnatal care, has already reached a total of forty-eight. The continued interest and activity of the several local committtees have established the groups on a firm foundation and promise to conduct the courses in the most profitable manner.

Two interesting features of the new circuit are the desire of a second group of Tazewell County physicians for an additional center at Richlands, and the invitation of the director of a Bluefield, W. Va., clinic in prenatal care for the Tazewell County group to meet at the time of his clinic and take advantage of an abundance of clinical material. Both the additional class at Richlands and the visit to Bluefield are subject to the decision of the Tazewell Society's Committee and the arrangement of convenient schedules for members and instructor, who has already indicated his willingness to shift his schedule to make any special arrangements that will prove advantageous to the work.

The enrollments, committees and arrangements for the meetings in the sixth circuit are as follows:

Tazewell on Mondays, beginning July 10th, at 2:30 P. M. in the Court House. Total enrollments, 10. Local Committee: Chairman, Dr. P. D. Johnston, Drs. J. N. Higginbotham, J. P. Williams, H. B. Frazier and W. H. Ballard.

Lebanon on Tuesdays, beginning July 11th, at 2:00 P. M. in the Red Cross rooms. Total enrollments, 5. Local Committee: Chairman, Dr. R. F. Gillespie, Drs. P. J. Bundy and W. C. Elliott.

Bristol on Wednesdays, beginning July 12th, at 7:15 P. M., in King's Mountain Memorial Hospital. Total enrollments, 14. Local Committee: Chairman, Dr. W. K. Vance, Jr., Drs. T. R. Bowers, C. W. Fleenor and E. H. Hearst.

Abingdon on Thursdays, beginning July 13th, at 2:00 P M., in the Council Chamber of the Mayor's Office. Total enrollments, 11. Local Committee: None formally appointed, but Drs. L. F. Cosby, L. M. Hines, D. L. Kinsolving and R. L. Hillman undertook to inform their associates and help furnish clinical material.

Marion on Fridays, beginning July 14th, at 1:00 P. M., in the office of Dr. Z. V. Sherrill. Total enrollments, 8. Local Committee: Chairman, Dr. A. B. Graybeal, Drs. T. K. McKee and G. D. Pettit.

### Favorable Showing of Dr. Lapham's Classes in Southwestern Virginia

The percentage of attendance of enrolled members of classes in prenatal and postnatal care, established in previous circuits in and around the larger cities, has been equalled by the five groups which Dr. Lapham has been visiting since May 1st. At each meeting, on the average, over three-fourths of the physicians enrolled have been present; or, to be exact, the percentage of attendance is 77.5. By comparison in respect to the ease and convenience of access to previous centers, the record established by these groups is especially encouraging. There is further encouragement in the fact that when a scheduled class at Gate City failed to materialize, the nucleus of that group joined with physicians in Kingsport, Tenn., to carry on the work, though three meetings were lost before the organization was effected. The leadership in establishing the Kingsport class was taken by Dr. T. T. McNeer, to whom the Joint Committee and the Field Clinician are indebted for a cordial cooperation which wiped off the record a temporary blot of a vacancy in the class schedule.

The especially fine attendance records of the physicians in the Fremont and Stonega groups are remarked with pride in their achievement. Fremont's attendance rate is 90 per cent, and the class has been especially active in utilizing Dr. Lapham's out-of-class services for instructional consultations. The Stonega group has an even higher record of attendance of 91.7 per cent. A tabular statement of the enrollment and attendance for the fifth circuit, which includes six meetings except for Kingsport, where only three had been held, follows:

| | Enrolled | | Visitors | | Attendance | |
|---|---|---|---|---|---|---|
| | No. | Present | No. | Present | Average | Per Cent |
| Fremont | 5 | 27 | 3 | 9 | 6.0 | 90.0 |
| Norton | 8 | 37 | 3 | 7 | 7.2 | 77.1 |
| Stonega | 8 | 44 | 5 | 14 | 9.7 | 91.7 |
| Kingsport | 4 | 8 | 8 | 13 | 7.0 | 66.7 |
| Pennington Gap | 11 | 48 | - | -- | 8.0 | 72.7 |

George W. Eutsler,
*Secretary Joint Committee.*

# Proceedings of Societies

## The Northern Neck Medical Association

Held its semi-annual meeting at Heathsville, May 25th, with Dr. W. N. Chinn, of Hague, presiding. Very interesting papers were read by the following local men: Dr. R. L. Hudnall, "Diarrhoea and Dysentery in Children under Three Years of Age"; Dr. E. R. Moorman, "Paroxysmal Haemoglobinuria of a Syphilitic Origin," discussed by Dr. T. W. Murrell, of Richmond; Dr. R. E. Booker, "Acute Glomerular Nephritis in Children," discussed by Dr. J. H. Smith, of Richmond. There were a number of visiting doctors from Richmond and Fredericksburg and the following Richmond men read interesting and helpful papers: Dr. J. S. Horsley, Jr., "Sieve Graft"; Dr. Frank Johns, "Extra Uterine Pregnancy"; Dr. Wallace Gill, "Ocular Headaches"; Dr. T. E. Hughes, "Bronchoscopy and Esophagoscopy."

The following were elected as delegates to the State Society: Dr. B. H. B. Hubbard from Lancaster County; Dr. V. L. Litsinger from Richmond County; Dr. E. T. Ames from Westmoreland County; and Dr. R. E. Booker from Northumberland County.

The meeting adjourned to meet at Kilmarnock the fourth Thursday in October, 1933.

R. E. Booker,
*Secretary.*

## The Fairfax County Medical Society

Met on May 11th at Fairfax. Dr. Lewis C. Ecker, of Washington, D. C., addressed the meeting on "Digitalis and the Heart." An interesting case report was presented by Dr. J. T. Jones, Herndon, Va. The meeting was

well attended and a fine dinner was served after adjournment.

A joint meeting of the Alexandria and Fairfax Medical Societies was held at the George Mason Hotel, Alexandria, Va., on the night of May 25th. "Cancer of the Skin," a new five reel film secured from the Journal of Cancer, was shown. A short film, "Man Against Microbe," completed the program. Thirty-eight physicians, among whom were several visitors from nearby counties, attended the meeting, following which a buffet supper was served.

A. L. Carson, Jr., M. D.
*Sec'y Fairfax Co. Med. Soc.*

**The Norfolk County Medical Society,**

At its annual meting on June 5th elected Dr. W. P. McDowell as president; Dr. C. Carroll Smith as vice-president, and re-elected Dr. Lockburn B. Scott as secretary-treasurer. All officers are of Norfolk. The election of Dr. Scott is for the thirteenth consecutive year.

At this meeting, delegates and alternates were also elected for the next meeting of the House of Delegates of the State Society in Lynchburg.

**Amelia County Medical Society.**

At a recent meeting of this Society, the following officers were elected: President, Dr. H. C. Rucker, Mattoax; vice-president, Dr. J. M. Habel, Jetersville; secretary-treasurer, Dr. James L. Hamner, Mannboro. Drs. Habel and Rucker were elected delegate and alternate, respectively, to the Lynchburg meeting of the State Society.

**Arlington County Medical Society.**

At a meeting of this Society held June 12th, the following officers were elected: President, Dr. W. C. Welburn, Ballston; and secretary-treasurer, Dr. R. N. Sutton, Clarendon. Dr. Welburn was also elected delegate to the meeting of the State Society in Lynchburg.

B. H. Swain,
*Retiring Secretary.*

**Roanoke Academy of Medicine.**

The regular monthly meeting of the Academy was held at the Shenandoah Hospital, Roanoke, Va., on June 5th, with the president, Dr. Frank A. Farmer, presiding. The meeting was turned over to Dr. T. J. Hughes, as chairman, and the following program was presented by the members of the Hospital staff:

Lateral Sinus Thrombosis—Drs. G. M. Maxwell and Ira Hurt.

Consecutive Perforations of Stomach by Peptic Ulcer—Dr. Frank Helvestine.

Case Report—Dr. L. G. Richards.

Schiller's Lugol Test as an Aid to the Early Diagnosis of Cervical Cancer—Dr. W. B. Huff.

Recent Drugs in Treatment of Diabetes Mellitus—Dr. P. A. Richards.

Delegates and alternates to the Lynchburg meeting of the State Society were elected at this time, following which the Academy adjourned for the summer months.

**The Lynchburg Academy of Medicine,**

Meeting in Lynchburg on June 5th, named its delegates and alternates to the State Society meeting to be held in that city in the Fall. At this meeting, Dr. F. R. Hopkins, Lynchburg, presented an interesting and instructive paper on "Diabetes in Childhood," especially stressing treatment. Dr. James Morrison is president and Dr. John Hundley, Jr., secretary.

**The James City-New Kent Medical Society**

Met at Toano, Va., June 1st. The meeting started with dinner at the hotel at 6:30 P. M. Dr. F. S. Johns, of Richmond, read a paper on the "Acute Abdomen," which was discussed by Dr. J. M. Hutcheson, also of Richmond. Other guests from Richmond were Dr. H. U. Stephenson and Dr. G. A. C. Jennings. Interesting case reports were given by Drs J. R. Parker and E. B. Kilby, members. Dr. J. R. Parker, of Providence Forge, is president, and Dr. L. V. Henderson, of Toano, is secretary.

# News Notes

**Finals of Virginia's Medical Schools.**

**Medical College of Virginia**

At the Commencement exercises of the ninety-fifth session of the Medical College of Virginia, Richmond, on the evening of May 30th, eighty-seven were awarded diplomas as graduates in medicine, twenty-two in dentistry, twenty-five in pharmacy, seven as bachelors of

science in pharmacy, and twenty-three in nursing.

Graduates in medicine, with hospital appointments, are given below:

Memorial Hospital, Richmond—Drs. Ellis Osler Coleman,* Collierstown; Charles William Copenhaver,* Bristol; James Nicholas Dudley, Danville; Willis Fiske Evans, Richmond; David Samuel Garner,* Lewisetta; Fred Thomas Hauser, Winston-Salem, N. C.; Jesse Bruce Hopkins, Norfolk; Wyman Plato Starling,* Roseboro, N. C.; and John Overbey Watkins, Jr., South Boston.

Johnston-Willis Hospital, Richmond—Drs. John Gordon Bell, Covington; Mary Elizabeth Johnston, Tazewell; and Edwin Darracott Vaughan, Ashland.

Retreat for the Sick, Richmond—Drs. Robert Buckley, Richmond; Samuel Harry Justa, Richmond; and James William Phillips, Jr., Hilton Village.

Stuart Circle Hospital, Richmond—Drs. Fielding Jason Crigler,* Madison; Jefferson Bishop Kiser,* Wise; and Edward Williamson Perkins, III, Petersburg.

St. Elizabeth's Hospital, Richmond—Dr. Hamilton Douglas Fitzpatrick,* East Radford.

St Luke's Hospital, Richmond—Dr. Malcolm Dewey Foster, Bertrand.

Tucker Sanatorium, Richmond—Dr. Bernard Candler Grigsby, Lebanon.

Sheltering Arms Hospital, Richmond—Drs. Lawrence Paul Jones,* Jarratt, and Joseph Lee Kinzie, Salem.

Lewis Gale Hospital, Roanoke—Dr. Stephen John Beeken, Christiansburg.

City Hospital, Lynchburg—Dr. Paul Quincy Daniel, Athens, W. Va.

Central State Hospital, Petersburg—Dr. Howard Lee Dean, Dinwiddie.

St. Vincent's Hospital, Norfolk—Dr. James Spencer Dryden,* Jeffs, and Carroll Bracey Robertson,* Petersburg.

Protestant Hospital, Norfolk—Dr. Joseph Bernard Jones,* Doswell.

U. S. Marine Hospital, Norfolk—Dr. Hugh Lyon Clements, Wilkerson,* Petersburg.

Johnston Memorial Clinic, Abingdon—Drs. Andrew Shapiro, Petersburg, and Henry Bernard Showalter, Kenbridge.

Chesapeake and Ohio Hospital, Clifton Forge—Dr. Russell Bruce Smiley,* Salem.

Baroness Erlanger Hospital, Chattanooga, Tenn.—Drs. Emory Hamlin Anderson, Richmond; Robert Harold Jones, Fairmont, W. Va.; and Sam Gilmore Saunders, South Hill.

Garfield Memorial Hospital, Washington, D. C.—Dr. Clarence Edward Arnette,* Saltville.

District of Columbia Hospital, Washington, D. C.—Dr. Joseph Alexander Robinson, King William.

Gallinger Municipal Hospital, Washington, D. C.—Dr. William Schnauffer, Jr., Brunswick, Md.

Emergency Hospital, Washington, D. C.—Dr. Nathan Sharove,* Richmond.

Lutheran Hospital, St. Louis, Mo.—Dr. Will Henry Aufranc, Columbia, Mo.

St. Louis University Hospital, St. Louis, Mo.—Dr. Channing Glenn,* Richmond.

White Cross Hospital, Columbus, Ohio—Drs. Louis Philip Bailey, Scottsburg, and Leland Coffey Brown,* Richmond.

Grant Memorial Hospital, Columbus, Ohio—Drs. Edgar Childrey, Jr., Dumbarton; James Brownlee Johnson, Jr., Keyser, W. Va.; and Victor Anthony Simiele, Norfolk.

Boston City Hospital, Boston, Mass.—Dr. William McKenzie Bickers, Richmond.

Worcester State Hospital, Worcester, Mass.—Dr. John Witherspoon Ervin, Morgantown, N. C.

Harbor View Hospital System, Seattle, Wash. — Dr. William Russell Bishop,* Galax.

State of Wisconsin General Hospital, Madison, Wis.—Drs. Francis Keith Bradford and James Thomas Green, Jr., both of Richmond.

Grady Hospital, Atlanta, Ga.—Dr. Ernest Perry Buxton, Jr., Richmond.

Huntington Memorial Hospital, Huntington, W. Va.—Dr. Joseph Willis Carney, Newport News.

Chesapeake and Ohio Hospital, Huntington, W. Va.—Drs. Charles Spurgeon Duncan, Iron Gate; Robert Hough Jordan,* Staunton; and Ernest Edward McClellan, Ethel, W. Va.

Charleston General Hospital, Charleston, W. Va.—Drs. Ona F. Mitchell,* Sugar Grove, W. Va., and Glenn Grey Perry, Thomasville, N. C.

Memorial Hospital, Princeton, W. Va.—Dr. Joel Hudson Smith, Athens, W. Va.

Norwood General Hospital, Birmingham, Ala.—Drs. John Berton Clement, Trenton, N. J., and Bruce William Mongle, Holston.

Tenn. Coal and Iron Ry. Hospital, Fairfield, Ala.—Dr. Courtney Smith Stickley, Stephens City.

Mercy Hospital, Altoona, Pa.—Dr. William Demetri Comess, Norfolk.

Pottsville Hospital, Pottsville, Pa.—Dr. Florence Elizabeth Hess, Philadelphia, Pa.

St. Vincent's Hospital, Erie, Pa.—Dr. Raymond B. Nutter, Jr., Enterprise, W. Va.

McKeesport Hospital, McKeesport, Pa.—Dr. Anthony Andrew Yurko, Hollidays Cove, W. Va.

St. Elizabeth Hospital, Elizabeth, N. J.—Drs. Gerard Vito Farinola, Brooklyn, N. Y., and Philip L. Wolgin, Elizabeth, N. J.

Jersey City Medical Center, Jersey City, N. J.—Dr. Upshur Higginbotham, Bluefield, W. Va.

Christ Hospital, Jersey City, N. J.—Dr. Paul Chester Pearson, Venter.

U. S. Marine Hospital Service—Dr. William Hyatt Gordon, Vista, Mo.

James Walker Memorial Hospital, Wilmington, N. C.—Dr. Paul Hogg,* Wicomico.

North Carolina Baptist Hospital, Winston-Salem, N. C.—Dr. Vernon Delmas Offutt, Romney, W. Va.

Norton Memorial Infirmary, Louisville, Ky.—Dr. Albert Fraser Lapsley, Richmond.

The Roosevelt Hospital, New York, N. Y.—Dr. Moses Hamilton McClintic, Hot Springs.

Trinity Hospital, Brooklyn, N. Y.—Dr. Irving Isadore Shure, Roanoke.

Metropolitan Hospital, New York, N. Y.—Dr. Alfred Steiner, Richmond.

U. S. Marine Hospital, Stapleton, Staten Island, N. Y.—Dr. Charles Whitfield Taylor,* Grifton, N. C.

Harper Hospital, Detroit, Mich.—Dr. George Anthony Moosey, Monongah, W. Va.

Municipal Hospital, San Juan, Porto Rico—Dr. Juan Mimoso Raspaldo, Caguas, P. R.

Hartford Municipal Hospital, Hartford, Conn.—Dr. George Frederic Salle,* Hallsboro.

Other graduates in this class are:

Dr. Robert Hyman Alterman, Richmond.

Dr. Rexford Alexander Burdette, Charleston, W. Va.

Dr. Pietro Virginius Carnso, Clarksburg, W. Va.

Dr. Samuel Francis Driver, Staunton.

Dr. Joseph Forrest Phillips, Newport News.

*These graduates received commission as First Lieutenants, Medical Section, in the Officers' Reserve Corps of the Army of the United States.

### University of Virginia

Fifty-nine students of the University of Virginia received the degree of doctor of medicine at the commencement exercises on June 13th. For the first time in four years, the entire fourth year medical class was graduated. The following is a list of graduates with hospital appointments:

Univerity of Virginia Hospital, University—Drs. Charles Varner Amole, Greensboro, N. C.; Edwin Edmunds Barksdale, Sutherlin; William Grossmann, Petersburg; Rosser Noland Hillsman, Jr., Lynchburg; Joseph Martin Hitch, Jr., Laurel, Del.; Hulbert Christopher McCoy, University; Asher Richardson Payne, University; John A. Moorman Thompson, Stevensburg; Robert Irvine Trent, Wilcoe, W. Va.; Robert Beaton Turnbull, Lawrenceville; and Vernon Atwill Turner, Bristol.

University of Virginia, Department of Pharmacology, University—Dr. William Maryon Moir, Roanoke.

University of Virginia, Department of Pathology, University — Dr. James Karl Scott, Terra Alta, W. Va.

Grace Hospital, Richmond — Dr. William Bernard Carpenter, Unionville.

St. Elizabeth's Hospital, Richmond—Dr. Jethro Meriwether Hurt, Blackstone.

Norfolk Protestant Hospital, Norfolk—Dr. Gershon John Levin, Norfolk.

Post-Graduate Hospital, New York, N. Y.—Dr. Nathaniel Lewis Bosworth, Jr., Lexington, Ky.

St. Luke's Hospital, Bethlehem, Pa.—Dr. Hugh Roland Butt, Norfolk.

West Baltimore General Hospital, Baltimore, Md.—Dr. Alfred Joseph Coan, Portsmouth.

Union Memorial Hospital, Baltimore, Md.—Dr. Charles Henry Conley, Jr., Frederick, Md.; Coleman Carnegie Johnston, Lexington, Ky., and Ernest Thomas Upson, Vinton.

Bushwick Hospital, Brooklyn, N. Y.—Dr. Cesare Francis DeBiase, Brooklyn, N. Y.

Johns Hopkins Hospital, Baltimore, Md.—Dr. John Essary Dees, Lake Charles, La.

Peter Bent Brigham Hospital, Boston, Mass.—Drs. Edward Arthur Delarue, Jr., Rich-

mond, and Clayton Bernard Ethridge, Washington, D. C.

Charity Hospital, New Orleans, La.—Dr. Glassell Slaughter Fitz-Hugh, University.

Univerity of Pennsylvania Hospital, Philadelphia, Pa.—Dr. Harrison Fitzgerald Flippin, University.

St. Joseph Hospital, Philadelphia, Pa.—Dr. Harry Maurice Frieden, Norfolk.

City Memorial Hospital, Winston-Salem, N. C.—Drs. Henry Hamilton Hammer, Narrows, and Edward Linden Kinney, Charlottesville.

Virginia Mason Clinic, Seattle, Wash.—Drs. Wallace Edgar Herrell, Marshall; John Bohannon Hozier, Norfolk, and John Watkins Trenis, Catlett.

Long Island College Hospital, New York, N. Y.—Dr. Frederick Matthews Jacobs, Roanoke.

Delaware Hospital, Wilmington, Del.—Dr. Robert Archer Goodwin Jones, Newport News.

Cincinnati General Hospital, Cincinnati, Ohio—Drs. Walter LeRoy Kilby, Peola Mills, and Edgar Prentice McKinney, Nacogdoches, Texas.

Christ Hospital, Jersey City, N. J.—Dr. Gabriel Llull, Adjuntas, P. R.

New England Hospital for Women and Chidren, Boston, Mass.—Dr. Eleanor Holman McCoy, Cambridge, Mass.

City Hospital, Cleveland, Ohio—Dr. Charles Hampton Mauzy, Jr., Harrisonburg.

Baltimore City Hospital, Baltimore, Md.—Drs. Thomas Andrew Moneymaker, Charleston, W. Va., and George Edward Waters, Blackstone.

State University Hospital, Oklahoma City, Okla.—Dr. Harold George Nix, Opp, Ala.

Episcopal Hospital, Philadelphia, Pa.—Dr. Frederick Ralph Person, Williamsburg.

Toledo Hospital, Toledo, Ohio—Dr. Jack Berry Porterfield, University.

Orange Memorial Hospital, Orange, N. J.—Dr. Charles Walton Purcell, Louisa.

Lakeside Hospital, Cleveland, Ohio—Dr. William Alexander Read, Newport News.

Mt. Sinai Hospital, New York, N. Y.—Dr. Charles Wolfe Rieber, Rockaway Beach, N. Y.

Garfield Memorial Hospital, Washington, D. C.—Dr. John Adrian Sims, De Kalb, Ill.

Medical Center, Jersey City, N. J.—Dr. John Thompson Brown Strode, Amherst.

St. Francis Hospital, Trenton, N. J.—Dr. Herbert William Swertfeger, Carson.

Church Home and Infirmary, Baltimore, Md.—Drs. George Nathaniel Thrift, Madison, and William Hoge Wood, Jr., Charlottesville.

Long Island Hospital, Boston, Mass.—Dr. Algernon Keeling Turner, Danville.

St. Francis Hospital, Charleston, W. Va.—Dr. John Ernest Vaughan, Baywood.

Touro Infirmary, New Orleans, La.—Dr. Herman Weinberg, Staunton.

St. Joseph's Hospital, Baltimore, Md.—Dr. James Edmond White, Norfolk.

Dr. Roger Gregory Magruder, Charlottesville, is also a graduate in this class.

**Our Lynchburg Meeting.**

The local committees have gotten actively to work in planning for the sixty-fourth annual meeting of the Medical Society of Virginia in Lynchburg, October 24th-26th. For information as to the meeting, members are requested to write chairmen of the various committees as listed in the June issue of the Monthly.

Cards have just been sent all members asking for titles of voluntary papers. The committee will use the rules adopted last year in the preparation of the program.

"Diseases of the Stomach" is the subject selected for the symposium. This will be divided as follows:

1. Physiology of the Stomach—Dr. W. R. Bond, Richmond.
2. Differential Diagnosis of Diseases of the Stomach—Dr. Blanton P. Seward, Roanoke.
3. Medical Treatment of Diseases of the Stomach—Dr. Alex. F. Robertson, Jr., Staunton.
4. Surgical Treatment of Diseases of the Stomach—Dr. C. Bruce Morton, University.

The general discussion which follows is to be opened by Dr. G. F. Simpson, of Purcellville and Dr. Wright Clarkson, of Petersburg.

Lynchburg and the surrounding country is at its loveliest in the Fall and the time for our meeting should be ideal for a vacation in that section. Make your plans to attend.

Several societies have reported names of delegates and alternates to the House of Delegates. We hope others will send their names

promptly as possible so we will have a full representation.

**News Notes from the University of Virginia, Department of Medicine.**

On May 3rd Dr. Henry B. Mulholland and Dr. William W. Waddell attended the meeting of the Augusta County Medical Society at Staunton. Dr. Mulholland addressed the Society on the subject of Treatment of Heart Disease and Dr. Waddell spoke on Diarrhea in Children.

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On May 15th Dr. J. Edwin Wood spoke before the Rockingham County Medical Society on the subject of Digitalis.

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On May 29th Dr. Lawrence T. Royster attended the meeting of the Norfolk County Medical Society in Norfolk and spoke on Rheumatism and the Rheumatic Heart in Children.

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At the meeting of the University of Virginia Medical Society on May 22nd reports were given on various papers on the program of the recent sessions of the American Clinical Congress in Washington, by Drs. Lehman, Morton, Drash, Neff, Wood, Swineford, Wilson and Royster.

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On May 26th Dr. Howard Kelly of the Johns Hopkins Medical School, gave a lecture before the Faculty and students on Some Personal Relationships with the History of Medicine within the Past Century.

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Mr. Paul Goodloe McIntire, of Charlottesville, Va., has given the sum of $75,000.00 to the Medical School for the study and treatment of mental diseases and $100,000.00, as a memorial to his wife, Anna Rhodes McIntire, for the study and treatment of cancer.

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At the meetings of the American Medical Association in Milwaukee, June 12th-16th, Dr. H. B. Mulholland presented a paper on Pellagra with Special Reference to Gastric Analysis; Dr. Oscar Swineford read a paper on Studies of the Anaphylactic Antibody; and Drs. D. C. Smith and W. A. Brumfield gave an exhibit on the Epidemiology of Syphilis.

**News Notes from the Medical College of Virginia.**

Dr. William deBerniere MacNider, Kenan Professor of Pharmacology, University of North Carolina Medical School, was awarded the honorary degree of doctor of science during the commencement exercises closing the ninety-fifth session of the Medical College of Virginia, Richmond, on Tuesday, May 30th.

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Dr. Julian A. Burruss, President, Virginia Polytechnic Institute, was the commencement speaker at the final exercises of the Medical College of Virginia, Tuesday, May 30th. The combined graduating classes in medicine, dentistry, pharmacy, and nursing numbered 164.

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During commencement week at the Medical College of Virginia, Richmond, portraits of Dr. Lewis Webb Chamberlayne, first professor of Materia Medica and Therapeutics, and Dr. Richard L. Bohannan, first professor of Obstetrics and Diseases of Women and Children, were unveiled. These portraits were gifts of the descendants of Dr. Chamberlayne and Dr. Bohannan. They occupy an interesting place in the Founders' Room of the new college library building.

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Dr. Arthur D. Wright, President of the John F. Slater Fund, Washington, D. C., delivered the address at the tenth commencement of the Saint Philip Hospital school of nursing, which is under the Medical College of Virginia, Richmond. This school is maintained separately for the education of Negro nurses. There were twenty-one graduates in the class this year.

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The third annual Saint Philip Hospital postgraduate clinic, conducted by the Medical College of Virginia, Richmond, at the large modern hospital maintained for the care of Negro patients, opened on June 19th to continue for two weeks. The course is designed for general practitioners and will be opened to the Negro physicians without restrictions as to residence. The class is limited to twenty-four.

**News Notes from the Duke University School of Medicine and Duke Hospital.**

On June 1st, Dr. George P. Muller, Professor of Clinical Surgery, at the University of Pennsylvania, Philadelphia, gave a clinic at the Duke Hospital on the Practice of Surgery.

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At the graduating exercises held at Duke University June 7th, fifteen medical students

received the degree of Doctor of Medicine and four received the degree of Bachelor of Science in Medicine. At the same time, fourteen nurses received their diplomas in Nursing—this being the first class to graduate from the School of Nursing, and three students in the School of Dietetics received the degree of Bachelor of Science in Dietetics.

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On June 10th the spring quarter of the medical school ended and the summer quarter commenced June 19th, with fifty students registered at Duke, for credit here, and three studying at other medical schools in this country, for which they will be given credit at this medical school. Several of the senior students, who are in their twelfth, or elective, quarter, will interne at various hospitals.

**The American Psychiatric Association.**

The 89th annual meeting of this Association was held May 29 to June 2, 1933, in Boston. Its program was replete with scientific and practical papers dealing with various phases of mental disorders, mental hygiene and allied subjects. The president, Dr. James V. May, who is commissioner of the Department of Mental Diseases of Massachusetts, opened the meeting with a strong and convincing address relative to maintaining the association in the highest possible plane of scientific psychiatry and in support of certain changes in its constitution, afterwards adopted, insuring the highest possible type of membership and scientific service. The Association met on certain days in joint session with the American Association for the Study of the Feebleminded and with the American Psycho-analytic Association. The Section on Convulsive Disorders held a meeting prior to the general sessions of the Psychiatric Association. One evening was given over to round table discussions devoted to management of problems of decreased support for state institutions; mental defectives in public and in private schools; parole and colony care of mental defectives; problems of criminality; psychiatric nursing; psychiatric social service; research in mental disorders; occupational therapy, and other topics.

Among the papers of a comprehensive nature was one on "Some Suggestions for the Future" (in the state care and treatment of the insane, etc.) by Dr. William A. White, Superintendent of the Government Hospital, at Washington, D. C., a nationally known authority and well known to the Virginia profession. It was formally discussed by Dr. William F. Drewry, of Richmond, Va. Another paper which should be of interest to many Virginians was one by Dr. John Joseph Kindred, of New York, but a native of Virginia, on "Some Medico-legal Considerations in Clinical and Civic Cases; Tests of Responsibility,"—which was in part an analysis of the case of Zangara who shot Mayor Cermak, but who intended, it appears, to kill President Roosevelt. The paper was much discussed by psychiatrists having medico-legal tendencies. There were numerous other papers that had special significance, presented by some of the leading psychiatrists of the country, nearly all of which were formally discussed. All the papers will be published in the *American Journal of Psychiatry.*

The officers of the Association for the ensuing year are Dr. George H. Kirby, of New York, as president, whose native home was North Carolina, and whose father was at one time Superintendent of the State Hospital at Raleigh; and the new secretary is Dr. William C. Sandy, Harrisburg, Pa., Director of Mental Hygiene of Pennsylvania. Auditors—Drs. H. C. Henry, Petersburg, Va., Clarence M. Pierson, Pineville, La., and Paul G. Taddiken, Ogdensburg, N. Y. The new vice-president who becomes president a year later is Dr. Charles F. Williams Superintendent of the South Carolina State Hospital, Columbia, S. C. In this connection, other Southern psychiatrists have been president of the Association—Dr. Eugene Grissom, North Carolina; Dr. Theophilus O. Powell, Georgia, a native of Virginia; Dr. Robert J. Preston, Virginia; Dr. William F. Drewry, Virginia; Dr. James T. Searcy, Alabama.

The annual meeting in 1934 will be held in New York.

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Virginia psychiatrists attending the meeting were Dr. J. H. Bell, Superintendent of the Virginia Colony for Epileptics and Feebleminded, Colony, Va.; Dr. William F. Drewry, Director of the Bureau of Mental Hygiene, State Department of Public Welfare, Richmond, Va., and Dr. H. C. Henry, Superintendent of the Central State Hospital, Petersburg, Va.

**Married.**

Dr. Robert Preston Hawkins, Jr., Clifton Forge, Va., and Miss Grace Vernon Reynolds, University, Va., on June 9th.

Dr. Garland Norfleet Carter, Bodyton, Va., and Miss Susan Elizabeth Carpenter, Richmond, Va., June 24th.

Dr. Charles Marsden Irvin, Roanoke, Va., and Miss Ruby Newman Hammer, Elkton, Va., June 1st.

Dr. Bernard Candler Grigsby, Lebanon, Va., of the class of '33, Medical College of Virginia, and Miss Mary Helen McKissick, Wellville, Va., July 12, 1932.

Dr. Henry Amiss Hornthal, Washington, D. C., and Miss Ellen Joanna Hall, May 13th.

Dr. Frederick Thomas Amiss and Miss Ruth Ann Broyles, both of Luray, Va., June 17th.

Dr. Russell Felts Hufford, Welch, W. Va., and Miss Mayme Eleanor Knight, Richmond, Va., June 17th. Dr. Hufford is a member of the class of '32, Medical College of Virginia.

**American Medical Association.**

At the eighty-fourth annual session of this Association held in Milwaukee, June 13th-16th, the following officers were elected: Dr. Dean Lewis, Baltimore, succeeded Dr. E. H. Cary, Dallas, as president; president-elect, Dr. Walter L. Bierring, Des Moines, Iowa; vice-president, Dr. John H. Musser, New Orleans, La.; secretary, Dr. Olin West, Chicago; and treasurer, Dr. Herman L. Kretschmer, Chicago.

Cleveland, Ohio, was selected as the place for the 1934 meeting.

There was a registered attendance of approximately 4,500 members. Of this number, the following twenty-six were from Virginia:

Dr. Howard Armstrong, Harrisonburg.
Dr. C. E. Conrad, Harrisonburg.
Dr. J. G. Davis, Jr., Christiansburg.
Dr. R. M. DeHart, Floyd.
Dr. James H. Deyerle, Harrisonburg.
Dr. Warren F. Draper, Richmond.
Dr. Harvey B. Haag, Richmond.
Dr. W. L. Harris, Norfolk.
Dr. Emory Hill, Richmond.
Dr. J Shelton Horsley, Richmond.
Dr. M. B. Jarman, Hot Springs.
Dr. Southgate Leigh, Norfolk.
Dr. W. Ambrose McGee, Richmond.
Dr. Ernest B. Miller, Elkton.
Dr. H. B. Mulholland, University.
Dr. R. L. Payne, Norfolk.
Dr. B. C. Shuler, Shenandoah.
Dr. Reuben F. Simms, Richmond.
Dr. Dudley C. Smith, University.
Dr. L. E. Stubbs, Newport News.
Dr. Oscar Swineford, Jr., University.
Dr. D. M. Thomasson, Lynchburg.
Dr. Warren T Vaughan, Richmond.
Dr. Fred J. Wampler, Richmond.
Dr. John S. Weitzel, Richmond.
Dr. T. J. Williams, University.

**Dr. G. G. Crawford,**

Strasburg, Va., has been elected one of the directors of the newly organized Rotary Club in that town.

**The Alumni Association of the Medical College of Virgina,**

At its annual meeting during commencement week at the College, elected Dr. John B. Fisher, of Midlothian, as president for the coming year. Dr. T. W. Wood (dentist) and Dr. H. H. Ware (physician), both of Richmond, were elected first and second vice-presidents, respectively, and Dr. F. H. Beadles, Richmond, was re-elected treasurer. The office of secretary is to be filled by appointment of the president.

A resolution of special interest adopted by the Association is to ask each member of the Association to give or raise during the coming year $10.00, to be devoted to fireproofing the Egyptian building and making it suitable for purposes of a medical college museum.

The Association referred to its officers the matter of designating a committee of seven to cooperate with a general committee of the College in planning for the proper observance of the centennial of the institution during the session of 1937-38.

**Doctors in Politics.**

In June elections, the following doctors were chosen to serve as members of their respective city councils: Drs. Percy Harris and L. R. Stinson, Scottsville, and Dr. H. S. Daniel, Louisa.

**Dr. Warren T. Vaughan,**

Richmond, Va., was elected secretary-treasurer of the Association for the Study of Allergy at its recent annual conference in Milwaukee.

**Dr. Henry C. Davis,**

Recently of Grundy, Va., has just located at Bluefield, Va., where he will continue his work in general practice.

**Dr. Paul B. Barringer,**

Charlottesville, Va., was the guest speaker at a recent meeting of the Richmond Chapter

of the University of Virginia Alumni Association.

**Dr. W. R. Bond,**

Professor of physicology at the Medical College of Virginia, Richmond, has been awarded the decoration of the Purple Heart by the United States War Department, in recognition of meritorious service in France during the World War.

**Merck and Co., Inc.,**

Of Rahway, N. J., has published a most attractive booklet to mark the occasion of the opening of their Research Laboratory, of which the formal dedication ceremonies took place on April 25th. In addition to illustrating and describing the laboratories, the booklet contains in full the principal address on "Academic and Industrial Research in the Field of Therapeutics" by Sir Henry Dale, Director of the National Institute for Medical Research, of London, England. It also contains excerpts from Mr. Merck's speech of welcome.

**Dr. Wyndham Blanton Honored.**

Dr. Wyndham B. Blanton, Richmond, Va., has been awarded the honorary degree of doctor of literature by Hampden-Sidney College, because of his splendid work in writing the "History of Medicine in Virginia." Two volumes have already been published and a third is nearing completion.

**The Virginia, Maryland and District of Columbia Medical Society**

At its Spring meeting on May 24th, in Alexandria, Va., elected the following officers: president—Dr. Frank J. Broschart, Gaithersburg, Md.; vice-president—Dr. C. C. Tumbleson, Sandy Spring, Md.; recording secretary—Dr. James A. Gannon, Washington, D. C.; corresponding secretary—Dr. A. Magruder MacDonald, Washington, D. C.; treasurer—Dr. Robert Scott Lamb, Washington, D. C.

Interesting papers were presented by Drs. Oscar Hunter, Wm. B. Herbst, Lyle Mason, S. B. Moore, Wm. Thornwall Davis, and D. Percy Hickling.

Through the unanimous adoption of a special resolution, Dr. D. Kerfoot Shute, of Washington, was elected to honorary membership.

**Dr. Eugene S. Groseclose,**

Who has been located at University, Va., since his graduation from University of Virginia in 1929, has moved to Lynchburg, Va., and has offices in Allied Arts Building. His work is limited to obstetrics and gynecology.

**Dr. Ira L. Hancock,**

Of the class of '31, Medical College of Virginia, after a residency at St. Vincent's Hospital, Norfolk, Va., has located at Creeds, Va., for the practice of medicine.

**The Medical Association of the Valley of Virginia**

Met at Clifton Forge on May 25th with Dr. H. Grant Preston, president, presiding. Dr. M. Pierce Rucker, of Richmond, was guest of honor at this meeting and read a paper on "A Discussion of Painless Childbirth." Other papers were presented by Drs. M. J. Payne, Staunton; N. M. Canter, Harrisonburg; H. G. Preston, Harrisonburg; John B. McKee, Winchester; and R. P. Hawkins, Jr., Clifton Forge.

The next meeting of this Association will be held in Winchester, September 28th. Dr. Alexander F. Robertson, Jr., is secretary.

**The Virginia Society of Oto-Laryngology and Ophthalmology**

Met in Harrisonburg, May 6th. Interesting scientific papers were presented at this time, and the following officers elected: President, Dr. H. Grant Preston, Harrisonburg; vice-president, Dr. Meade Edmunds, Petersburg; and secretary-treasurer, Dr. Edwin W. Burton, Charlottesville.

The next meeting will be held in Lynchburg, the date to be named later.

**The West Virginia State Medical Association,**

At its annual meeting in Charleston, in May, elected Dr. Roy Ben Miller, of Parkersburg, as president for 1934. Dr. Albert G. Rutherford, Welch, and Dr. G. H. Barksdale, Charleston, were elected vice-presidents, and Dr. T. M. Barber, Charleston, was re-elected treasurer. Mr. Joe W. Savage, Charleston, is secretary. Huntington was selected as the 1934 place of meeting.

**Dr. A. W. Armentrout,**

Recently of Winchester, Va., has located at Martinsburg, W. Va., where he is connected with the staff of the King's Daughters' Hospital in that place and is engaged in the practice of surgery.

**Dr. John P. Snead, Jr.,**

Of the class of '32, University of Virginia, Department of Medicine, who has just com-

pleted a residency at Johnston Memorial Clinic, Abingdon, Va., has located for practice at Sperryville, Va.

**Dr. Luedde Awarded Leslie Dana Gold Medal.**

The Leslie Dana Gold Medal, awarded annually for the most outstanding achievements in the prevention of blindness and the conservation of vision, was presented in June to Dr. William H. Luedde, director of the department of ophthalmology in the St. Louis University School of Medicine.

Dr. Luedde was selected for this honor by the National Society for the Prevention of Blindness in cooperation with the Missouri Association for the Blind, through whom the medal is offered annually by Mr. Leslie Dana, of St. Louis. The conditions of the award set forth that it is to be made for "long meritorious service for the conservation of vision in the prevention and cure of diseases dangerous to eyesight; research and instruction in ophthalmology and allied subjects; social service for the control of eye diseases; and special discoveries in the domain of general science or medicine of exceptional importance in conservation of vision."

**North Carolina State Medical Society.**

At its annual meeting in April, Dr. Isaac H. Manning, Chapel Hill, was installed as president and Dr. Paul P. McCain, Sanatorium, was chosen president-elect. Dr. L. B. McBrayer, Southern Pines, is secretary of the Society. Pinehurst was selected as the next place of meeting, the dates to be May 30-June 2, 1934.

**Dr. H. A. Tabb,**

Gloucester, Va., has ben elected president of the Country Club of Gloucester, Va., for the coming year.

**Dr. L. E. Walton,**

Recently of New Marker, Va., announces his removal to Pullman, W. Va.

**Dr. Micajah Boland,**

Commander (M. C.) U. S. Navy, has been transferred from the Naval Training Station, Great Lakes, Ill., to the Navy Yard, Portsmouth, Va., effective July 1st. He is a native of Virginia and an alumnus of the University of Virginia, Department of Medicine.

**Dr. Douglas Vanderhoof,**

Richmond, Va., was unanimously elected president of the Richmond Community Fund, on May 31st, to fill the unexpired term of Mr. Alexander W. Weddell, recently appointed ambassador to the Argentine Republic.

**The Medical Society of the District of Columbia,**

At its meeting on May 3rd, elected the following officers for the year beginning July 1st: President, Dr. Prentiss Willson; vice-presidents, Drs. Daniel L. Borden and Margaret M. Nicholson; secretary-treasurer, Dr. Coursen B. Conklin (re-elected). All officers are located in Washington.

**The Southside Virginia Medical Association**

Held its regular quarterly meeting at LaCrosse, Va., June 13th. The program was as follows: "The Etiology, Diagnosis and Medical Treatment of Pyelitis"—Dr. Kinloch Nelson, Richmond; "Pyelitis and its Relation to Anomalies of the Urinary Tract in Children"—Dr. A. S. Hurt, Jr., Richmond; "The X-Ray in the Diagnosis and Treatment in Kidney Diseases"—Dr. Allen Barker, Petersburg; "The Cystoscope in Diagnosis and Treatment of Diseases of the Genito-Urinary Tract"—Dr. W. T. Gay, Suffolk; and "Surgery of the Kidneys"—Dr. Herbert Jones, Petersburg.

The reception committee, composed of Drs. W. W. Wilkinson, C. V. Montgomery, L. H. Bracey and W. L. Varn, arranged a pleasant meeting and gave a barbecue dinner preceding the meeting.

**The Chalmers Gold Medal,**

Awarded by the Royal Society of Tropical Medicine and Hygiene of England, was presented to Dr. Saul Adler, Professor of Parasitology at the Hebrew University, at the annual meeting in England of the Council of the Royal Society on June 15th. As Director of the Kala-Azar Commission of the Royal Society for 1930-32, Dr. Adler undertook researches in Italy and Malta under the joint auspices of the Hebrew University and the Royal Society, in the tropical diseases in which he is said to have done outstanding work.

**Dr. E. V. Valz,**

Commander in the U. S. Navy, recently stationed at Marine Barracks, Paris Island, S. C., has been transferred to the U. S. S. Nevada, San Pedro, Calif. Dr. Valz is an alumnus

of the University of Virginia, Department of Medicine, and has been a member of the Medical Society of Virginia for a number of years.

**Dr. William P. Gilmer,**

Clifton Forge, Va., was recently elected first vice-chairman of the local chapter of the American Red Cross.

**Dr. Martin D. Delaney, Jr.,**

Located on July 1st in the office of his father, the late Dr. M. D. Delaney, at 618 Cameron Street, Alexandria, Va., for the general practice of medicine and surgery. He received his M. D. degree from Georgetown University, Washington, D. C., in 1932, and has just completed a year's rotating service in the Georgetown University Hospital.

**Dr. Ramon E. Garcin,**

Richmond, Va., was re-elected a member of the School Board of this city for a new term, effective July 1st.

**The National Society for the Prevention of Blindness**

Observed its twenty-fifth anniversary on May 24th. When the Society was first organized it had a membership of only ten men and women but now has 16,600 members throughout the United States.

The greatest achievement of the Society has been in the field of ophthalmia neonatorum. Complete eradication of this source of blindness is regarded as scientifically possible.

There were two "sight-saving" classes organized in 1913, and this number has grown to 421. Fifteen new classes were organized in 1932.

**Dr. Harry J. Warthen, Jr.,**

Of the class of '25, University of Virginia, Department of Medicine, has returned to his home in Richmond, Va., after a seven months' stay in the New Surgical Clinic of Freiburg, Germany, where he was engaged in clinical and experimental work. He also visited surgical clinics in Central Europe, England and Scotland during his European trip.

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# Obituary Record

**Dr. Emmette Edward Walker,**

For a number of years a resident of Pamplin, Va., died at his home in that place on June 9th, after a long illness. He was a native of Mecklenburg County, Virginia, and 63 years of age. Upon completion of his academic education, Dr. Walker entered the former University College of Medicine of Richmond, Va., and received his medical degree from this school in 1900. He had been a member of the Medical Society of Virginia since the following year. His wife and two daughters survive him.

**Dr. John Cleveland Philips,**

Portsmouth, Va., died recently after a short illness. He was 48 years of age and a graduate from the Maryland Medical College, Baltimore, in 1912. Dr. Phillips was a native of Georgia but had resided in Portsmouth since 1912. He had been city physician for fourteen years and was a member of the Norfolk County Medical Society. His wife and an adopted daughter survive him.

**Dr. John Williams Brown**

Died suddenly at his home in Hampton, Va., June 11th. He was 59 years of age and received his degree of medicine from the University of Virginia in 1899. Dr. Brown was a Mason. He is survived by a brother and sister.

**Dr. John Chalmers Da Costa,**

Samuel D. Gross professor of Surgery at Jefferson Medical College, Philadelphia, died at his home in that city on May 16th, after a long illness. He was seventy years of age and had been connected with the faculty of Jefferson Medical College for nearly forty-five years. He was a surgeon and medical writer of international note.

**Dr. Julian Davis Arbuckle,**

Of Lewisburg, W. Va., died of heart disease on May 3rd. He was 57 years of age and a graduate of the former University College of Medicine, Richmond, Va., in 1901. Dr. Arbuckle is survived by seven children.

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# Virginia Medical Monthly

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RICHMOND, VA., AUGUST, 1933

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## A NEW TREATMENT FOR FRACTURES OF THE OS CALCIS.*

ROBERT V. FUNSTEN, M. D., University, Va.

Professor of Orthopedic Surgery at the University of Virginia.

The results of conservative treatment of fractures of the os calcis have been very unsatisfactory and the cause of prolonged or permanent disability. One of the reasons for inadequate treatment has been inadequate X-ray examination and improper consideration of the fracture from a mechanical standpoint.

Frequently the severity of the injury has not been realized until the deformity was well established and the opportunity for reduction has been lost. When a man has fallen from a height of five feet or more, landing squarely on his heel, it is a good rule to consider that he must have a fracture of the os calcis unless it is ruled out by X-ray findings. Unfortunately, the clinical manifestations of os calcis fractures are not always in keeping with the inherent disabling qualities.

When a severe fracture of the os calcis occurs, such as one might receive from a fall of eight or more feet landing directly on the heel, there is usually an upward displacement of the posterior fragment, causing a flattening of the longitudinal arch. There is also squashing of the os calcis laterally causing impingement on the external malleolus, broadening of the heel and frequently disturbance of the astragalocuboid joint. The astragalocalcaneal joint is almost always affected. If the fracture is allowed to heal with any one of these deformities, disability might easily result.

Where a bad result has been obtained, there is usually a flattening of the longitudinal arch with outward displacement of the heel and a knock ankle deformity. Any attempt to walk on uneven ground causes discomfort referable chiefly to the subastragaloid joint. There is an inability to bear the weight on the toes and walking is extremely difficult and painful even on level surfaces. The inability to rise on the toes is due to the loss of mechanical advantage because of shortening of the os calcis. The inability to walk on uneven ground is due to irregularities in the subastragaloid joint with scar tissue formation and traumatic arthritis. Further disability is due to the impingement of the lateral displacement on the external malleolus and the peroneal tendons.

There are many adequate methods of treatment but if the severity of the fracture and the mechanical problems involved are not clearly shown by X-rays, the treatment too often consists in the application of a plaster of Paris cast, with bad results. We have made it a practice to insist at the outset on an X-ray taken from an angle of 45°, through the posterior aspect of the foot showing a projection of the lateral surfaces of the os calcis. In addition, anterior-posterior and lateral views are made. An attempt is made in the interpretation of these X-rays to determine, (1) whether there is upward displacement of the posterior fragment; (2) whether there is lateral displacement of the fragments; (3) whether there is involvement of the subastragloid joint, and (4) whether there is involvement of the calcaneocuboid joint. If any of these conditions is present, operative treatment is indicated. The operative technique is simple. Although the various steps include procedures which have been reported by various writers, the combination of these procedures into a routine of treatment has been effective.

Operation: The patient is given a compression bandage to reduce swelling. This is accomplished by wrapping several thick layers of cotton batting about the leg and foot, extending down to the toes. Over this an elastic bandage or an ordinary bandage is wound with increasing tension. This should be started at the toes. The patient is allowed to remain quiet in bed for a period of about one week, thereby giving time for tissue reactions.

*Read at the sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

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Fig. 1.—Lengthening of the tendo-Achilles by the sliding method.

lengthening does not exceed three-quarters of an inch. (Fig. 1.) There are two purposes in this. First, to reduce resistance when correcting upward displacement of the distal fragment of the os calcis and second, to reflexly inhibit the action of the gastrocnemius during convalescence. The wound is closed with No. 1 plain catgut.

Fig. 2.—Impaction of the lateral fragments.

2. The foot is turned so that the inner malleolus is against a sandbag. An ordinary three inch rolled bandage is then placed in a curved position under the external malleolus and with a mallet the fragments are impacted. (Fig. 2.)

3. Next a nick is made through the skin just anterior to the attachment of the tendo-Achilles, superior to the border of the os calcis, on the outer side of the foot. Through this a No. 24 urethral sound is passed to the inner side where a small incision is made to allow the point to come through over the upper surface of the os calcis. With the toes against the table and with a lever board between the surgeon's chest and the arch of the foot, traction is placed on the sound in such a way as to bring the posterior portion of the os calcis down into its normal position, restoring the arch of the foot. (Fig. 3.) After this, examination is again made to determine the condition of the lateral impaction. If this is not complete, following the restoration of the posterior fragment of the os calcis, reimpaction is done. The sound is then removed and a suture placed in each wound. The patient is then turned on his back and a cast is applied, including the bandage under the external malleolus to maintain impaction of the lateral fragments. Two pieces of felt are placed in the arch and traction made downward on the heel and toes. (Fig. 4.) To insure proper arching, the lever board is pressed into the arch while the plaster is hardening. (Fig. 5.)

Fig. 3.—Reduction of upward displacement of posterior fragments of the os calcis.

The cast is allowed to remain for six weeks

when it is bivalved and motion in the joints begun. Weight bearing is usually not allowed until ten weeks, when the support of the cast is supplemented by a high felt arch support,

Fig. 4.—Bandage under external malleolus and felt in the arch included in plaster cast.

Thomas heel and single upright brace, to prevent strain on lateral motion.

By means of this operative routine, it has been possible, in a series of fifty-two cases operated under my own direction and over a

Fig. 5.—Lever board in arch of the foot; traction applied to heel and toes while cast is drying.

hundred operated by others, to reduce the disability very decidedly. My co-worker in the development of this operative routine, Dr. A. C. Hall, of Detroit, has operated a large series of cases with good results. No case so far has been complicated by post-operative infection. The average disability has been five and one-half months. A number of cases have returned to their work at the end of three and one-half months. There has been no case of permanent total disability.

Of the fifty-two cases, thirty-six were followed for a period of two years or more. Of these, twenty-three had returned to their previous occupations without further disability, eight had returned to full time work other than their original occupation and five had not returned to work.

In some instances, traumatic arthritis of the subastragaloid or calcaneocuboid joints has resulted. With this there has been pain on weight bearing and pain on any lateral motion of the foot. Since many of the fractures have occurred in men who, due to exceptionally hazardous work, need to be active and particularly expert in balancing themselves, any disturbances in the joints which would result in loss of these qualities usually excluded them from their former occupations. Since this hazardous type of work frequently carries with it higher wages, it has often been very difficult to return such an employee to an occupation equally remunerative. Rehabilitation sometimes becomes necessary to prepare him physically and mentally for other occupations. If, after six or eight months, a man is still having pain due to traumatic arthritis in the subastragaloid and calcaneocuboid joints, it has been our rule to create an arthrodesis of the joint by operative fixation.

## Conclusion

1. The disability from conservative treatment of fractures of the os calcis has been long in most instances and in many permanent.

2. Inadequate X-ray examinations have frequently led to misinterpretation of the severity of the fracture.

3. By means of a comparatively simple operative procedure, which can in no way be considered hazardous, and with post-operative treatment combining support and physiotherapy, it has been possible to greatly reduce the disability in a majority of cases.

## Discussion

Dr. William Tate Graham, *Richmond:* I am very grateful to Dr. Funsten for what he has said about the os calcis. Dr. Funsten is not a newcomer to Virginia; he was born down here in Virginia. He wandered out to the West, but, fortunately, just had to come back here where he belongs. He has good training in surgery and good training in orthopedic

surgery, and I am glad he was made Professor of Orthopedic Surgery at the University of Virginia.

When it comes to fractures of the os calcis, I think what he said about taking care of it for a long time is one of the most important things he said. Frequently, people regard fracture of the os calcis as an unimportant thing and get them up too soon, and they get traumatic flat-foot, with pain and discomfort; whereas, if you keep them in protection for four or five months you get a good weight-bearing foot and return them to a useful, happy life.

I think complete reduction, so that you get the arch up, as he said, so that when they begin walking they will not have traumatic flat-foot in addition to the fracture, is very important. It certainly ought to stabilize your fracture better, ought to hasten union, and ought to minimize the chances for your losing your reduction after it is once obtained.

When it comes to getting rid of the pain which is going to happen in some of these cases, I think a subastragaloid arthrodesis is fine. If I may use Dr. Campbell's name, he says in some operations on the foot they are going to have some pain no matter what you do, but he believes in the substitution of less pain for more. They will inevitably have some pain, in some cases, from this subastragaloid arthrodesis.

I wish to thank Dr. Funsten again for the nice way in which he has brought this to our attention and for the facts which he brought out, which so many of us for a long period of time have neglected.

## PYELONEPHRITIS WITH SPECIAL REFERENCE TO ETIOLOGY.*

B. E. HARRELL, A. B., M. D., F. A. C. S., Norfolk, Va.

Infection of the kidney is by far the commonest condition the urologist is called upon to treat. It is the largest contributor to the mortality of genito-urinary surgery, and its importance is increased by the frequency with which it is confused with other lesions of the abdominal organs.

Renal infection is a disease of the extremes of life. It is extremely common in infancy and early childhood, frequently being a complication of the usual children's diseases. There is a falling off in frequency around the ages of ten to fifteen. Between the ages of twenty and forty the frequency again rises. This is the period of greatest physical activity when the women are bearing children and both sexes are most exposed to the storms of life. During the period from forty to fifty there is a lull, as Caulk expresses it, a sort of "Quiet before the storm." The women have stopped becoming pregnant and the men have not yet developed their prostatic enlargements. After fifty the frequency again rises in both sexes.

Kidney infection is much more common in the female than in the male. In infancy females out-number males by about three to one, during maturity by about two to one, while after fifty the sexes are about even.

Infection may be due to almost any type of organism that invades the human body. It may accompany almost any infectious disease and may be due to the causative organism of the disease or to pyogenic bacteria as secondary invaders. In the great majority of cases infection is due to the colon bacillus. It is well-known that kidney infection in girls and infection during pregnancy is almost uniformly due to the colon bacillus. But even if we exclude these groups and accept the figures of clinics that do not see these cases, the colon bacillus still predominates with a frequency of 60-80 per cent. Next in frequency is the staphylococcus albus, and then staphylococcus aureus. In the remaining group may be found almost any organism that occurs in the body.

It is recognized clinically that there is a connection between infection of the urinary tract and intestinal disturbance. Boeckel recently reported two cases of hemorrhagic pyelonephritis found to be secondary to intestinal stasis. Heitz-Boyer finds showers of colon bacilli in the urine of certain patients from time to time, often without pus, and believes they enter the circulation from slight lesions of the intestinal mucosa.

There is a well established association between infection of the upper respiratory tract in infancy and childhood and kidney infection. Helmholz and Millikin found that the kidney infection was not caused by the bacteria producing the primary infection, but almost invariably by the colon bacillus. Bumpus and Meisser, working on the relation of focal infection to pyelitis in the adult, were able to show that streptococci isolated from the teeth of patients suffering from pyelitis, when injected extravenously into rabbits, tended to localize in the kidney and there produce focal lesions. Furthermore, they were able to show that, with the focus still intact, only the colon bacillus could be isolated from the urine.

LeFur introduced different organisms into the bladder of animals for the purpose of producing ulcers. Although he originally injected staphylococci and streptococci into this organ, the colon bacillus was subsequently recovered from the urine. He emphasized the fact that the colon bacillus is a secondary invader of the urinary tract of minor importance.

There is a connection between the lymphatics of the intestinal tract and those of the kidney,

*Read at the sixty-third annual meeting of the Medical Society of Virginia in Richmond, November 1-3, 1932.

but whether or not infection follows this route has not been proven. However, it has been observed that in peritonitis, blood stream infections are frequent, whereas, if the thoracic duct is opened, such infections do not occur.

The constant association of cystitis with infection of the kidney led to the assumption that cystitis was the primary condition and that infection reached the kidney by way of the lumen of the ureter. Numerous attempts were made to demonstrate this possibility on the cadaver, but it was found that under these circumstances reflux did not occur. Recently Graves and Davidoff have shown that in the living animal reflux does occur under certain conditions. They found that, with the bladder in a state of tonic contraction, such as exists when it resists distention, reflux occurred in 73 per cent of their experiments. Reflux did not occur if this active sustained resistance were lacking. They found that section of the uretero-vesical valve did not favor reflux, and that an inactive or abnormal ureter had no bearing on the regurgitation. Kretschmer has observed reflux in children. Numerous observers have noted reflux in adults under the fluoroscope.

We must agree that regurgitation up the ureter does occur. It is difficult to estimate the importance of this phenomenon since it seems that some factor other than the presence of bacteria is necessary for infection to take place. Sweet and Stewart anastomosed one pole of the kidney to the intestine in various positions from the duodenum to the sigmoid so that there was free communication between the pelvis of the kidney and the bowel and yet kidney infection did not result.

The outer wall of the ureter is well supplied with lymphatics which are continuous with those of the outer wall of the bladder. Numerous attempts have been made to demonstrate lymphatics in all layers of the ureter, but the question of lymph vessels in the mucosa and submucosa is still not satisfactorily answered. The lymph path from the bladder to the kidney is, however, not direct. The lymphatics of the lower third drain into the hypogastric glands, the middle third drains into glands in the lumbar region, while the upper third drains into glands along the aorta and vena cava and then communicates with those of the kidney proper. Though the lymph path up the ureter is imperfect, it has been clearly shown that infection may follow this route. Young believes such infection must penetrate the bladder wall and follow the outer covering of the ureter upward.

Sweet and Stewart removed a portion of one ureter and substituted a piece of rubber tubing of the same size, thus interrupting the course of the lymphatics but not the lumen of the ureter. They found that infection followed the lymphatics up to the rubber tube but did not pass beyond this point.

In another series of experiments they mobilized the ureter without detaching it from either the bladder or kidney. They then transplanted a loop of ureter into the bowel so that the normal urinary flow from kidney to bladder was not interrupted, yet the outer wall of the ureter was exposed to the action of intestinal contents. Diffuse infection of the kidney resulted with little or no inflammation of the ureteral mucosa. Recently Carson, using rabbits, exposed the ureter through an abdominal incision and at the level of the bladder with a fine needle injected paratyphoid bacilli into the wall of the ureter. Infection traveled up the ureter and involved the kidney. When injection was made into the lumen of the ureter, the kidney did not become infected.

Bacteria may reach the kidney by way of the blood stream during almost any septic process. Staphylococci and streptococci have been found in the urine in cases of acute endocarditis, typhoid bacilli in cases of typhoid fever, and pneumococci in cases of pneumonia. Furthermore, bacteria injected into the blood stream are excreted by the kidney. Biedl and Kraus noted that staphylococci appeared in rabbit urine within twelve minutes of intravenous injection. Grawitz showed that mould spores appeared in the urine after intravenous injection.

Whether the kidney can excrete bacteria without harm to itself is somewhat open to question. A large number of observers have produced evidence to show that the kidney is not damaged by the passage of small numbers of bacteria. Almost an equal number believe that the passage of bacteria causes minute foci of pathology in the kidney. If this is true, these lesions heal promptly and completely.

After an infection enters the kidney, whether by the blood stream or by an ascending route, either by direct extension up the ureter or by way of the lymphatics, the ultimate pathological process is the same. Helmholz, in experi-

ments on rabbits, found that in early cases intravenous injection was more apt to produce lesions of the cortex, while ascending infection was most apt to attack the parietal portion of the pelvis. However, in late cases the origin of infection could not be determined from examination of the kidney.

There are decided differences between the two groups of bacteria, cocci and bacilli, both in their distribution in the kidney and in the nature of the pathological processes they produce. Cocci tend to localize in the cortex and produce areas of focal necrosis. These areas do not readily drain into the pelvis, so there may be extensive involvement of the cortex and even abscess formation while the kidney is secreting a sterile urine. There may be an intermittent pyuria as these abscesses break through into the pelvis from time to time. It is this group of organisms, the cocci, that is almost uniformly the cause of multiple disseminated abscesses of the kidney, of carbuncle of the kidney, and of perinephritic abscess. On the other hand, the colon-typhoid group of organisms tend to attack the tubules and pelvis. If there is efficient pelvic drainage these cases usually recover without serious renal damage.

This difference in behavior of the two groups of organisms Dyke has studied and attempted to explain on embryologic grounds. Without going into details, his theory is that cocci lodge as emboli in vessels that are afferent to the glomerulus; that the glomerulus serves as a barrier to drainage into the pelvis and that for lack of drainage abscesses result; and that the colon bacillus attacks a part of the secreting mechanism that is efferent to the glomerulus, namely, the pelvis and collecting tubules. These two types of lesions are not strictly exclusive but tend to grade more or less into each other.

It has been repeatedly demonstrated that the injection of pathogenic organisms into the healthy bladder gives rise to no demonstrable lesion of the bladder, ureter, or kidney. Brewer was able to cause infection only by injecting bacteria into the bladder and then producing obstruction by tying off the urethra.

Brewer produced kidney infections by traumatizing the kidney and then injecting pathogenic bacteria into the blood stream. When he produced anemia of the kidney by partially obstructing the renal artery, or congestion by partially obstructing the renal vein, intravenous injection of bacteria was followed by renal infection. None of his control animals developed any surgical lesion of the kidney. Sampson tied the right ureter in dogs and injected a pure culture of staphylococcus aureus into the jugular vein. In every case renal infection resulted. Many writers have noted the rapid spread of organisms along the tubules when they were injected into the lumen of a ligated ureter. Schmidt and Aschoff found organisms in the convoluted tubules and glomerular capsule seven hours after injecting them into the ligated ureter.

The most important consideration in the etiology of kidney infection is a certain degree of renal or ureteral retention. It is probably not simply a matter of contamination of a stagnant urine, since any increase in intrapelvic tension causes very serious changes in the circulation of he kidney. Caulk finds obstruction in at least 80 per cent of his cases and calls attention to the fact that, once infection has begun, a sort of vicious circle is set up in that the kidney automatically blocks itself with its own inflammatory products.

In the bewildering mass of material that has accumulated on this subject, we find varied and often contradictory opinions, but there are two points that are outstanding: 1. There is a relation between extra-urinary infection and infection of the kidney. They are certainly related in point of time, and there is probably a direct relationship. 2. The most important factor not only in the production, but in the perpetuation of renal infection is stasis.

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*Medical Arts Building.*

DISCUSSION

DR. A. I. DODSON, *Richmond:* I know we have all enjoyed Dr. Harrell's paper and his detailed and systematic description of what is known at the present time about pyelonephritis. There are just a few things I should like to emphasize. One is the role played by stasis as a causative factor in pyelonephritis. I feel that is the most constant and frequent predisposing cause of the infection, and I believe it is the most important single factor to be considered in attempting to relieve a patient of infection of the kidneys. The next is the relation between skin infections and certain infections of the kidney. Of course, you know it is believed that many carbuncles of the kidney, perinephritic abscesses, etc., may be due to infections of the skin Recently we had a patient in the ward in Memorial Hospital who had very extensive scabies. She had scratched herself, and the scratches had become infected, and her skin was in rather a pitiful state. She had very pronounced multiple abscess infection of one kidney. Two or three patients I have seen recently with perinephritic abscess gave a definite history of crops of boils that had preceded this infection of the kidney. When a patient comes in with symptoms referable to the kidney, and with a history of skin infection, this condition should be suspected.

Then, as to the relation of gastro-intestinal conditions; I have in mind one patient who has frequent attacks of colitis, and they are practically always followed by a flare-up in her kidney infection. These things seem to me, from clinical experience, to have a very definite bearing on the condition.

DR. JOSEPH F. GEISINGER, *Richmond:* Unless you gentlemen are particularly interested in urology, as I am, you probably failed to notice that Dr. Harrell, in a very brief space of time, has given you a rather amazingly comprehensive view of the etiology of kidney infection. I wish to express my appreciation to him for bringing us this enormous amount of data in this form.

My own experience with kidney infections comes from several hundred cases which we have followed at Stuart Circle Hospital, and it has led me to the conclusions expressed by Dr. Harrell. My object in discussing the subject is to emphasize one particular point.

Dr. Harrell has throughout his paper a thought running that may not have been clearly obvious to you; that is, that kidney infection, as a rule, is a sort of double-edged sword, having on the one side the focus that produces the sequel of infection, and, on the other side, the predisposing or contributing cause, which he has summed up in the one word, "stasis." Therefore, so far as my experience is concerned, it is necessary to be diligent in searching for both of these factors. It is only by running this germ into its lair and destroying its habitat, and also by establishing drainage, that we are likely to get satisfactory results. Unless we bear that distinctly in mind, we are very apt to treat one side of the case and leave the other neglected, and wind up with essentially the same condition as before treatment.

I have observed reflux by the normal ureter in several instances. Therefore, when a case is peculiarly intractable, though all discoverable foci are removed, I deliberately test for reflux, and have occasionally found that there lies the "nigger in the woodpile." With stasis in the lower urinary tract and reflux into the upper urinary tract, the outcome is inevitable and obvious.

DR. C. J. ANDREWS, *Norfolk:* I feel that there is nothing which Dr. Harrell has said with which we could possibly disagree. As Dr. Geisinger has just said, he has brought to us practically all the information which is known today regarding this subject. I want to stress one or two features of it.

Dr. Harrell calls attention to the fact that the majority of these cases are in women, a considerable majority, and that, in addition to that, they occur principally during the child-bearing period. The other point which he has brought to our attention is the fact that stasis is one of the main features which accompanies it. My own connection with this work is entirely from the standpoint of the treatment of women. Now, we know that during pregnancy, and after pregnancy, for that matter, there is more opportunity for stasis; stasis is encouraged more than at any other time on account of the condition. We know it is true that there is inclined to be a stasis of the intestinal tract; we know there is stasis of the urinary tract. We know that is true even if the case is entirely normal, as Dr. Harrell says. I admit that he took some of my enthusiasm out when he said that he was considering only the cases that were normal. I wonder just how we can know that. I feel that there is one feature of it in which we have one way, at least, by follow-up work of knowing what will happen to them next time.

There is some question as to why there is a stasis. We know that the pelvis of the kidney dilates during pregnancy, in practically all cases, the right more than the left. Some say that is due to the pressure of the uterus; others say that is not true, but that it is due to some changes in the genital tract and particularly in the ureter itself. But we do know there is a stasis. We see a great many cases of pyelitis during pregnancy. Many of them clear up without any trouble; even one ureteral catherization may relieve the condition. After the woman has been delivered and discharged, she may be apparently all right. Many of them are all right, but if they have another pregnancy they may have trouble again. It is much easier to investigate when the woman is not pregnant, and I do feel that this should be done in all cases. One case I saw was a woman with placental apoplexy. We knew she had pus in the urine at that time, and she still had pus at her discharge examination, though symptom-free. Dr Harrell happened to walk into my office one day when I had just removed 700 c c. of urine from the pelvis of her right kidney We know if that condition had not been found she would have been one of those women who show up later, possibly at forty or forty-five or fifty, with an absolutely dead kidney or trouble in the next pregnancy.

The distended bladder from urinary retention after labor is undoubtedly a source of much urinary tract disturbance. The usual method is to avoid catheterization if it be possible. I believe that there is far less danger in frequent catheterization than in urinary retention, and I try not to allow more than fifteen ounces of urine to accumulate in the bladder, even though frequent catheterization may be needed to prevent this.

## SOME RESULTS OF SERUM THERAPY IN LOBAR PNEUMONIA.*

CHARLES P. RYLAND, JR., M. D., Binghamton, N. Y.

This is a very small group of cases, namely of seventy, of lobar pneumonia that I have studied, only twenty-three having had serum therapy; but by bringing before you our results I hope to stimulate a discussion and hear the results of others. All the cases in this series have been treated at the Charles S. Wilson Memorial Hospital, Johnson City, N. Y., from January 1, 1930, to June 30, 1932.

Various investigators have been working on the development of a successful anti-pneumococcic serum for a number of years. Felton in 1924 produced a serum which has been almost universally adopted, and has been given his name. In conjunction with New York City Hospitals and workers, he has serum for Type I infections and another for Type II. Commercially at the present time a combined serum for Types I and II is available in 10 c.c. syringe packages containing 10,000 units of each.

According to Cowan and his associates, the first requisite in the treatment of pneumonia by anti-serum is the detection of the type of pneumococcus active in the particular case; the second is the supply of the corresponding anti-serum, for it is useless to administer an anti-serum which does not correspond to the active organism. As mentioned above, effective anti-sera are available for only Types I and II pneumonias, but these infections constitute more than half of the cases.

The serum is anti-bacterial, not anti-toxic—the pneumococcus has no demonstrable exo- or endo-toxin—and its function is to supply opsonins, agglutinins, precipitins, etc., which hasten the phagocytosis and destruction of the pneumococcus. It does not cause quicker resolution of the pathological lesions in the lungs, prevent death from cardiac failure or anoxemia, neutralize non-specific poisons in the blood, or obviate the necessity of surgical interference in empyema.

Because of the loss of time in the detection of the infecting type (typing from the sputum requiring nearly twenty-four hours), and the importance of early administration of the serum, it has been our practice to give it as soon as the diagnosis is made, and repeat every eight hours until the type has been determined. If the type is I or II it is continued until the temperature is normal or nearly so.

All investigators have learned that the use of serum has lessened, to an appreciable amount, the mortality of the disease in their practice; but too much must not be expected from serum treatment. Death in pneumonia may result from many causes—cardiac and respiratory failure, intoxications other than pneumococcal or complications, side issues of the infection, or the result of associated infections or antecedent visceral disease. Against these the serum has no direct response.

The administration of large doses of serum intravenously necessarily entails the risk of anaphylaxis, but the Felton serum is manufactured in such a way as to minimize this risk. It is derived from the serum protein of immunized horses by precipitation of the globulin antibody carrying fraction in a large bulk of distilled water, the precipitate being redissolved in concentrated solution so that the therapeutic dose measures 10 c.c.

### Technic of Administration

The serum is preferably administered intravenously. If, for any reason, it is necessary to avoid intravenous injections, the serum may be given intramuscularly if double the amount is used; but the clinical results may not be so favorable. For intravenous injection, the serum should be carefully warmed to body temperature in a vessel of warm water (as nearly 100 F. as possible; a higher temperature will destroy the antibodies). Each package of anti-pneumococcic serum contains a small vial of a 1:10 dilution of normal horse serum for the conjunctival test which should always be done before giving the serum. If the patient is hypersensitive to such a degree that he probably cannot be safely injected with serum protein, a positive conjunctival reaction will occur in fifteen minutes, manifesting itself by hyperemia of the conjunctiva, with dilated conjunctival blood vessels, increased lacrimation and sometimes by itching. If the conjunctival test is negative, it is safe to proceed with the injection. It must be injected very slowly; five minutes should be devoted to the first c.c. of the dose and nine minutes for the remaining 9 c.c. One should always have 1 c.c. of epinephrine hydrochloride 1:1000 ready for use in case there is any respiratory difficulty or other signs of allergic reaction occur.

*Read at the sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

### Incidence

Of the various types of pneumonias Type I is the most frequent, and Type II is next. These constitute about 55 to 60 per cent of the cases. Type III is about 11 per cent, and Type IV, which includes a large number of infrequent types, comprises about 33 per cent. In this series the type of organism was determined

TABLE 1

Incidence of Pneumococcus Types

| | Wilson Memorial Hospital | | Cecil-Bellevue Hospital 1920-31 | |
|---|---|---|---|---|
| | No. of Cases | % | No. of Cases | % |
| Type I.... | 4 | 16 | 1,384 | 32.1 |
| Type II.... | 5 | 20 | 991 | 23.0 |
| Type III.... | 3 | 12 | 477 | 11.1 |
| Type IV.... | 13 | 52 | 1,458 | 33.8 |
| | 25 | ..... | 4,310 | ..... |

in only twenty-five cases. Table 1 shows our incidence as compared to that of Cecil in Bellevue Hospital from 1920-31. The incidence of Types I and II is only 36 per cent. That of Type III about the usual 11 per cent and Type IV which is higher than the usual 33 per cent. I believe the incidence would be more nearly normal were the series larger. All of the cases which were typed did not receive serum therapy.

### Mortality

There were seven deaths in this series of seventy cases, as shown in Table 2, for a mortality of 9.5 per cent. Of these, four had severe complications, as coronary thrombosis, chronic myocarditis, chronic arthritis (of ten

TABLE 2

Mortality Rate

| | | |
|---|---|---|
| Total Cases...70 | Untreated Cases.....47 | Treated Cases..23 |
| Total Deaths.. 7 | Untreated Deaths..... 5 | Treated Deaths..... 2 |
| Mortality...10% | Mortality...10.6% | Mortality...8.6% |

years standing), and endocarditis. One case developed lobar pneumonia following an operation for intestinal obstruction caused by a healed duodenal ulcer. There were two straight pneumonia deaths. The type of pneumococcus was undetermined in all seven fatal cases. Of the forty-seven untreated cases there were five deaths for a mortality of 10.6 per cent. There were two deaths in the twenty-three treated cases for a mortality of 8.6 per cent. This shows a slightly lower mortality with treated cases. But our general mortality is much lower than ordinary. The accepted mortality rate is 20 to 40 per cent. Finland, Park, *et al*, Baldwin, Cecil and Sutliff, in four different series, reduced their mortality by one-third by the use of serum. In each case it was approximately 40 per cent without the use of serum.

### Results

Of the treated cases there were three each of Type I and Type II, two of Type III, eight of Type IV, and seven cases in which the type was undetermined. For purposes of description I shall term a case which had a crisis by the fifth day as markedly improved; after the fifth day, but with lower temperature following serum, as improved; and without effect on crisis or temperature as unimproved. In Type I and II cases the crisis occurred from

TABLE 3

Results of Serum Treatment of Type I and II Cases

| Case No. | Type | No. of Injections | Day of Crisis after 1st Inj. | Day of Crisis after Onset of Illness | Result |
|---|---|---|---|---|---|
| 1034 | II | 2 | 2 | 7 | Improved |
| 1090 | I | 2 | ½ | 6 | Improved |
| 6896 | II | 4 | 3 | 5 | Marked Impr. |
| 5059 | I | 5 | 2 | 7 | Improved |
| 8660 | II | 2 | 2 | 4 | Marked Impr. |
| 9646 | I | 4 | ½ | 3 | Marked Impr. |

twelve to seventy-two hours following the first injection as shown in Table 3. Three of the cases showed marked improvement and three improvement. Type I is supposed to be more amenable to treatment, but the above shows that more injections were required in Type I cases than Type II.

There were ten cases of Types III and IV, as shown in Table 4. Anti-pneumococcic serum Types I and II is not supposed to have any effect in Types III and IV, but in some of our cases it did have some influence. There was a Type IV case that had one injection and had a prompt crisis in twelve hours on the second

day of the illness. From this case's response to serum it would seem that there was some mistake in typing—it probably was a Type I

TABLE 4

Results of Serum Treatment of Type III and IV Cases

| Case No. | Type | No. of Injections | Day of Crisis after Ist Inj. | Day of Crisis after Onset of Illness | Result |
|---|---|---|---|---|---|
| 1031 | IV | 1 | ½ | 2 | Marked Impr. |
| 1135 | IV | 1 | 8 | 9 | No Impr. |
| 1590 | IV | 2 | 10 | 13 | No Impr. |
| 4000 | IV | 3 | 2 | 8 | Temp. lower |
| 4404 | IV | 2 | 8 | 9 | No Impr. |
| 4547 | III | 3 | 2 | 9 | Temp. lower |
| 4715 | IV | 5 | 2 | 9 | Temp. lower |
| 5486 | IV | 2 | 9 | 10 | Temp. lower |
| 7208 | III | 1 | 5 | 8 | Temp. lower |
| 7455 | IV | 6 | 3 | 7 | Temp. lower |

or II. In six of the other cases the temperature was definitely lowered following serum, but the crisis was no earlier than in untreated cases. The serum treatment had no effect on three cases.

The two fatal cases were among those seven untyped (Table 5). One had twelve injections and died on the fourth day of illness. The other had one injection and died on the fifth day of illness, this death being partially caused by coronary thrombosis. One case showed marked improvement, had five injections, with

TABLE 5

Results of Serum Treatment of Untyped Cases

| Case No. | No.of Injections | Day of Crisis after Injection | Day of Crisis after Onset of Illness | Result |
|---|---|---|---|---|
| 1824 | 12 | Died on 4th day | ..... | ..... |
| 3816 | 2 | 2 | 7 | Temp. lower |
| 3930 | 1 | 16 | 17 | No Impr. |
| 4227 | 3 | 4 | 11 | No Impr. |
| 5070 | 1 | Died on 5th day, | had coronary | thrombosis |
| 8679 | 3 | 7 | 9 | Temp. lower |
| 9636 | 5 | 1½ | 3 | Marked Impr. |

a crisis on the third day of illness, thirty-six hours after the first injection. This would lead one to think that it was a Type I or II case. Two cases had lower temperatures after injections; perhaps they were Types III or IV. Two of these were unimproved.

## Conclusions and Summary

1. This report is based on a clinical and bacteriological study of seventy cases of lobar pneumonia in Wilson Memorial Hospital.

2. Sixteen per cent of the cases were Pneumococcus Type I.

3. Twenty per cent were Pneumococcus Type II.

4. Twelve per cent were Pneumococcus Type III.

5. Fifty-two per cent were Pneumococcus Type IV.

6. Three per cent, namely two cases, were streptococcic pneumonias, both of whom recovered.

7. The mortality of the whole series was 10 per cent.

8. The mortality of the untreated cases was 10.6 per cent.

9. The mortality of the serum treated cases was 8.6 per cent.

10. Anti-pneumococcic serum Types I and II should be given every case of lobar pneumonia as soon as the diagnosis is made and continued until the temperature falls, unless the sputum is reported Types III or IV.

11. In six cases of Type I and II pneumonias reviewed herein the crisis occurred from twelve to seventy-two hours after the first injection was given.


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### Discussion

Dr. Walter B. Martin, *Norfolk:* Several years ago I heard Dr. Cohen, in Philadelphia, make the statement that in the last fifty years, in spite of the progress in medicine in all its branches, the mortality in pneumonia had not been lowered. I think all of us would welcome any method that would give us the hope of lowering the mortality in this terrible disease.

In reviewing Dr. Ryland's paper, I think it is quite apparent that he has gotten definite results in some of his cases. When we look at the thing in a broad, general way, however, we are not so certain that we are yet ready to embark upon a general program of serum therapy in pneumonia. In individual cases in man we see definite benefit. When we consider statistical studies in pneumonia, there are so many variables and so many factors that it is almost impossible to reach a conclusion except

from a very large series of cases collected over a long period of time.

Pneumonia in the winter time is about 8 per cent more fatal than it is in the summer time. Pneumonia will vary from year to year as much as 10 per cent in its mortality; for instance, in one year one type may show a mortality of 10 per cent, and the next year of 20 per cent. The mortality varies in the different age groups, and there is also tremendous variation according to the particular type of pneumococcus, Types 1 and 4 being quite mild and Types 2 and 3 (particularly Type 3 in elderly people) being much more fatal. This makes it rather hard to reach conclusions.

There are a few other difficulties in the way of application of serum therapy except in a large institution. One is the difficulty in determining the group of these patients when you have not access to a laboratory, and the second is the cost of the serum to the patient. Of course, if we had a specific serum that we could use, without regard to type, or were sure that we could save a good number of these cases by serum therapy, the actual cost would not matter a great deal; but with the present status of serum therapy we hesitate to spend from fifty to a hundred dollars for serum with the uncertain prospects of benefit. I think the time is coming when we shall have an effective serum against pneumonia and when the methods for determining the type may be perfected so that they can be carried out in a shorter time. It is important, if we are to get results from the treatment of pneumonia with serum, that they be diagnosed early. The earlier the serum is used, the greater prospect there is that serum therapy will be effective.

I do not believe, at the present time, that serum therapy is practical in a general way In hospitals, on properly selected cases, it can do much good.

MR. AUBREY STRAUS, *Richmond:* I shall just call attention to one point; that is, that the recent methods of diagnosis, especially those advanced by Dr. Sabin, have greatly shortened the time for type determination; and I think that would, in a measure, answer one of the objections that Dr. Martin has raised to serum therapy. I have not tried out these methods, but, according to those that have tried them, in five to six hours the type can be determined with reasonable accuracy.

## EXOPHTHALMIC GOITER.

### A Review of Our Present Knowledge of the Etiology and Pathology of the Disease.*

R. DUVAL JONES, JR., M. D., Norfolk, Va.

The clinical syndrome of exophthalmic goiter, recognized by Parry in 1815, was first described in detail by Graves, 1835, and by Von Basedow in 1840. Although these keen observers recognized the disease, they were not aware of its association with hyperfunction of the thyroid gland, and it was not until some years later that anything was known about the physiologic action of this important organ. Today it is common knowledge that in exophthalmic goiter there is hyperfunction and parenchymatous hypertrophy and hyperplasia of the thyroid gland. However, we are still more or less in the dark as regards the etiology and fundamental pathology of the disease.

Because of the necessity of a clear conception of the function of the thyroid in discussing exophthalmic goiter, I shall give you a brief review of the history of the development of our present knowledge of the subject as outlined by Marine before attempting to discuss the various theories of the cause of the disease. Our earliest knowledge of the subject dates back to the observation of Gull in 1874. He observed a peculiar cachexia, associated with atrophy of the thyroid gland, now recognized as myxedema. In 1883, Kocher noted that following complete removal of large goiters in human beings a symptom-complex often developed which was identical with Gull's disease. Murray reported the first cure of a case of Gull's disease in 1891, effected by the injection of a glycerol extract of fresh sheep's thyroid, and about the same time it was observed in Germany that a similar effect could be produced by feeding thyroid gland by mouth. In 1895, Magnus-Levey found that the essential effect of feeding thyroid gland substance to individuals with myxedema, or to normal persons, was to raise the total metabolism, that is, it greatly increased their oxygen consumption and heat production, which is to the present day the only known physiologic action of the thyroid gland. In the same year Beaumann discovered the presence of iodine as a normal constituent of the thyroid, which Oswald showed in 1899 to be contained mainly in the colloid material. The work of Williams, Lenhart and Marine 1905-1910 at the Western Reserve University, demonstrated that the essential change in the development of goiter was a tremendous decrease in the iodine store in the gland, and that the administration of iodine caused a rapid storage of this substance in the gland, and brought about involution of any existing hyperplasia. In 1916, Kendall, of the Mayo Clinic, isolated thyroxine, the active principle of the thyroid, although it was first produced synthetically by Harrington and Banger in 1926.

Returning to the discussion of exophthalmic goiter, I again emphasize the fact that the primary factors in the etiology of the disease are unknown. Most of us are aware of the fact that shock, grief, mental strain, severe nervous tension, worry, etc., are significant in

*Read at the sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

precipitating an attack, or in producing crisis during an attack, but we do not know why. Heredity apparently has no bearing. Age is not an important factor, as the disease is not uncommon in both the young and the aged. Although sex is generally considered a factor, the disease occurring about five times as often in women as in men, I have been impressed in the past few years with an apparent increase in the percentage of male patients with exophthalmic goiter. Whether or not environment plays a role is open to question. Pemberton is of the opinion that it does. He states, "I am forced to the conclusion that the incidence of exophthalmic goiter is high in those districts where endemic goiter is high. This analogy applies only in the United States. In Switzerland and certain other mountainous regions of Europe and India, the incidence of endemic goiter is high but exophthalmic goiter is comparatively infrequent." His belief is that the intense high speed of living in America, which is far greater than in Europe or India, may be the stimulus which drives the gland to excessive activity which may result in exophthalmic goiter. Although he doubts the significance of iodine deficiency as an etiologic factor, he intimates that deficiency of iodine may lower the resistance of the thyroid gland, thereby making its condition favorable for its characteristic response to the stimulus.

According to Jackson, the lack of iodine is not the cause of exophthalmic goiter, as it is of colloid goiter. In this connection it is interesting to note that in Tidewater Virginia and coastal North Carolina, generally considered a non-goitrous region, the incidence of exophthalmic goiter is far from rare and is apparently on the increase. Whether or not this impression is due to an actual increase, or to earlier and better diagnosis is difficult to determine. However in reviewing the records of 212 cases of goiter operated upon by my colleague, Dr. R. L. Payne, there were 122 cases of exophthalmic goiter and only 90 cases of adenomatous goiter. Yet a larger number of these patients came from around Cape Hatteras and other coastal communities where fishing is the chief occupation, and seafood is an important part of the daily diet.

The theory of infection in the production of exophthalmic goiter has long been the subject of much controversy. It has many advocates although nothing definite has been proved along this line. It is easy, however, to conceive of infection producing an exacerbation, by virtue of lowering the general resistance of a patient who already has a mild exophthalmic goiter, which under normal conditions remain in a relatively quiescent state. According to H. S. Plummer, there were very definite waves of high incidence in Minnesota following the influenza epidemics of 1895 and 1918, which at least suggests that infection may be a factor in precipitating the disease.

Having admitted that we do not know the cause of exophthalmic goiter, the question arises—just what is exophthalmic goiter? Is it essentially a thyroid disease, or does the fundamental disturbance lie elsewhere? The most generally accepted view is that it is fundamentally a disease of the thyroid, in spite of the fact that recent investigations of Crile, Marine and others indicate that there is a reason for questioning the soundness of this theory.

Plummer believes that the syndrome of exophthalmic goiter may be explained by a two product hypothesis. It is his opinion that under certain conditions the thyroid gland functions in such a way as to produce an abnormal product, the nature of which is unknown, as well as excessive quantities of normal thyroxine, and that the abnormal product produces the outstanding phenomena of the disease such as exophthalmos, the characteristic psychic state, and gastro-intestinal crisis. Still he offers no satisfactory explanation for the abnormal function of the gland.

Crile is of the opinion that so-called hyperthyroidism, which is generally conceded to be the outstanding phenomenon of exophthalmic goiter is not due primarily to disease of the thyroid gland. His conception is that it is produced by a disorder of the entire kinetic system, which is composed of the nervous system (central and vegetative), the adrenals, and the thyroid gland; that the function of this system is to transform potential into kinetic energy, and that one part of the system cannot be considered irrespective of the other. For this reason he suggests that "hyperkineticism" would be a more accurate and a more descriptive term than hyperthyroidism. In support of his theory he presents the following interesting observations: (1) Hyperadrenalism is practically identical with hyperthyroidisms;

(2) hyperthyroidism has never been seen in a case of Addison's disease; (3) the excision of one adrenal gland temporarily lessens the symptoms of hyperthyroidism comparable to the removal of one lobe of the thyroid gland; (4) deep narcotization with morphine nullifies the effect of adrenalin; (5) the division of the innervation of the thyroid gland controls the disease to a great extent; (6) in myxedema adrenalin loses most of its physiologic effect; (7) physiologic rest profoundly benefits a patient with hyperthyroidism; (8) excitation of the nervous system is the most potent cause of the disease and the crisis of the disease. Quoting Crile, "The thyroid is governed at least largely by its innervation; innervation is regulated by the adrenals; the adrenals are controlled by the brain and nerve centers, the chemical activity probably plays a role. The thyroid certainly cannot originate hyperplasia; the thyroid has hyperplasia forced upon it. The adrenal glands cannot stimulate themselves; stimulation is forced upon them. The nerve receptors cannot engage in self-excitation; excitation is imposed on them by the physical and chemical forces of the external and internal environment. The entire nerve mechanism, the adrenals, the thyroid and, in a secondary sense, other ductless glands act reciprocally; that is, nerve tissue, the adrenals and the thyroid tissue collaborate in a stepping-up process. In certain individuals, because of some previously existing unknown factor, some chemical or physical unbalance, the normal controls become ineffective or are lost, and a reciprocal excitation occurs after the environmental excitation that initiated the activity has ended."

Along the same line, Marine in 1929 presented the following facts; (1) That a symptom complex closely resembling Graves' disease can be produced in a large percentage of rabbits and cats by sufficient injury to the supra-renal glands. (2) That at the Western Reserve University it has been consistently observed, notably by Stewart, Rogoff and himself that glycerol extract of fresh ox suprarenal cortex, when fed to a case of Graves' disease regularly caused an outstanding gain in weight, a gain in muscle strength and a gradual lowering in metabolism. (3) That Tzent-Gyorgyi had isolated an active reducing substance in crystalline form from the suprarenal cortex which he thought was hexuronic acid; that the work which he had done with it indicated that it had a striking effect on the oxidation and reduction processes going on in living tissues, and particularly that it lowered the activity of the thyroid gland as indicated by the fact that it caused thyroid involution. Suffice it to say that much remains to be uncovered regarding the etiology of exophthalmic goiter, and the relationship of the thyroid gland to other organs of internal secretion.

Regardless of our conception of the etiology of Graves' disease, or whatever may be the relationship between the thyroid gland, the nervous system and other organs of internal secretion, most authorities agree that in all cases of exophthalmic goiter there is a parenchymatous hypertrophy and hyplerplasia of the thyroid gland and so far no definite pathological lesion has been demonstrated consistently in any other organ. In recent years a good deal has been written about hypertrophy of the thymus in Graves' disease but this observation has not been sufficiently constant to be of much significance.

Although it has been definitely established that the specific changes in the thyroid gland of exophthalmic goiter are parenchymatous hypertrophy and hyperplasia, it is still somewhat a moot question whether or not the typical exophthalmic goiter presenting diffuse primary parenchymatous hypertrophy and hyperplasia of the thyroid gland is a distinct entity, or merely a stage of the same diseased process commonly known as nodular or adenomatous goiter with toxic symptoms, presenting multiple localized areas of hypertrophy and hyperplasia. The most widely accepted view is that they are separate and distinct diseases.

Following the observation of Greenfield, who first noted that hypertrophy and hyperplasia of the thyroid parenchyma were constant in exophthalmic goiter, many observers became interested, and his observations were confirmed by the works of Lewis, MacCallum, L. B. Wilson, MacCarty, Plummer, Rienroff and others. In 1908 L. B. Wilson, in a critical study of 259 thyroids, diagnosed exophthalmic goiter and removed by C. H. Mayo, observed that primary hypertrophy and hyperplasia of the thyroid parenchyma could be demonstrated in 80 per cent of the cases, but that the remaining 20 per cent did not show these changes. For this reason he could not come definitely to the conclusion that this evidence of activity on

the part of the thyroid was constant in exophthalmic goiter. As a result, during the following four years, very careful records were kept by Wilson and Plummer of the pathological and clinical data on all thyroid cases operated upon at the Mayo Clinic. These records were kept separately and, when finally compared case by case in 1913, Wilson observed that during the years 1911 and 1912, every patient diagnosticated clinically as true exophthalmic goiter and on whom thyroidectomy was performed, furnished thyroid tissue which pathologically showed primary parenchymatous hypertrophy and hyperplasia. He also observed that in his total series of 1,793 thyroids, 1,208 of which were so-called exophthalmic goiters, but four instances of marked primary hypertrophy and hyperplasia of the thyroid were noted in cases which did not show clinical evidence of true exophthalmic goiter, and three of these four patients were children. Furthermore, in re-checking his earlier series reported in 1908, it was noted that the majority of the cases diagnosed exophthalmic goiter in which primary parenchymatous hypertrophy and hyperplasia were not demonstrated would not have at a later time been diagnosed clinically exophthalmic goiter. During the same year (1913), H. S. Plummer published a paper on the clinical and pathological relationship of simple and exophthalmic goiter in which he called to our attention (1) That, apparently, at least two distinct types of thyroid intoxication exist, one associated with non-hyperplastic goiter, the other with hyperplastic or hypertrophic thyroid. (2) That exophthalamos was noted only in cases having hyperplastic or hypertrophic thyroids. (3) That the failure of their statistics to show the above conclusions earlier was due largely to the following errors: (a) accepting the clinical findings and diagnosis of exophthalmic goiter for all cases placed on the exophthalmic goiter list; (b) accepting the pathologic findings from only a portion of the gland. (4) That the clinical errors were (a) attributing tremor, tachycardia, etc., of neurasthenia, cardiovascular and nephritic disease to the thyroid, and (b) noting the existence of exophthalmos when only a Stellwag's sign and naturally prominent eyes were associated with thyrotoxicosis of non-hyperplastic goiter. In the same study it was clearly demonstrated that the average time intervening between the appearance of non-hyperplastic goiter and the occurrence of symptoms was 14.5 years, and that constitutional symptoms were noted in the average patient affected with the hyperplastic thyroid within a few months after the appearance of goiter.

In a more recent review (1928), Plummer, with the aid of MacCarty and his associates, reported observations on 15,055 additional cases of goiter operated upon between 1912 and 1921, 4,992 of which were cases of typical Graves' disease. This study not only confirmed his original impressions, but brought to his attention the following observations: (1) that in 20 per cent of the cases of exophthalmic goiter the disease was superimposed upon an old adenomatous goiter; (2) that of the 4,992 cases of exophthalmic goiter operated upon there were 326 cases (6.53 per cent) who returned with recurrence, whereas of the 9,362 cases of endemic goiter recurrence was observed in only three cases. In concluding this paper he states; "(1) Diffuse hypertrophy and localized hypertrophy are not, in general, part of the same process. (2) Exophthalmic goiter and adenomatous goiter with hyperthyroidism are distinct entities. (3) The hyperthyroidism of exophthalmic goiter is caused by hyperfunction of the entire thyroid. (4) It is probable that the hyperthyroidism of adenomatous goiter is caused by localized reaction in the thyroid gland and is only an incident in the course of endemic goiter."

If we accept Plummer's conclusions, the typical gland of exophthalmic goiter may be described as follows: The thyroid is usually symmetrically enlarged. It is smooth, except in cases where the disease is superimposed upon old adenomatous goiter, in which event it may be nodular. Macroscopically, the cut surface appears meaty and dry as compared to the viscid watery appearance in colloid or adenomatous goiter. Microscopically the alveoli are irregular in size and shape and contain very little colloid material. The parenchymatous cells which line the alveoli are columnar in shape, and in places are so increased that they are thrown in folds into the lumina of the alveoli, presenting a papillomatous appearance. The blood vessels are increased in size and in number, and there is a definite increase in fibrous tissue between the alveoli.

With improvement of symptoms following iodine therapy, the thyroid undergoes involution, as a result of which the anatomical and histologic picture may be so changed that it

takes on the appearance of a normal gland, or even that of a colloid goiter. If carefully studied, however, one may still find multiple areas of parenchymatous hypertrophy and hyperplasia. Sager, in a study of 200 cases of exophthalmic goiter, 100 of which had been given iodine, noted the following changes resulting from iodine administration: (1) There was a striking increase in the amount of colloid, so much so that in many cases the gland presented the appearance of colloid goiter with areas of hyperplasia. (2) With increase in the amount of colloid he consistently found a decrease in hyperplasia. In many alveoli the living cells were restored to their nomal cuboidal appearance and in other areas there was a marked flattening of the epithelium. (3) There was apparently less connective tissue between the alveoli, though he could not determine whether this apparent decrease was due to a reduction in the number of connective tissue cells, to mechanical pressure, or whether it was simply an apparent reduction due to the enormous increase in colloid.

The investigation of Reinhoff and his associates, impressed by the similarity between the structure of the thyroid gland during the various stages of artificial involution produced by iodine administration to the structure of the various types of so-called adenomatous goiter with or without hyperthyroidism, have led them to the conclusion that adenomata of the thyroid are extremely rare, and that in the majority of instances the so-called nodular or adenomatous goiter with hyperthyroidism and the diffusely hypertrophic hyperplastic gland of Graves' disease represent stages of one and the same disease: the one having undergone a cycle or cycles of involution, the other representing the primary fulminating stage of the diseased process. Although the reports of their investigation are most enlightening, the problem is by no means solved and, at least for the time being, I do not feel that sufficient evidence has been produced to dispute the pathological and clinical observation of Plummer, Wilson and MacCarty.

## Conclusions

1. The problem of the etiology of exophthalmic goiter is still unsolved.

2. The investigations of Crile, Marine and others suggest that the adrenals, the thyroid, and the nervous system are involved in the production of Graves' disease, although the only known pathology which is constantly associated with the disease is that of the thyroid gland.

3. Plummer, Wilson and MacCarty have produced most convincing clinical and pathological evidence, that exophthalmic goiter and so-called adenomatous goiter with hyperthyroidism are separate and distinct entities; that diffuse parenchymatous hyperplasia and hypertrophy are not merely a stage of one and the same diseased process as multiple localized areas of hypertrophy and hyperplasia.

4. The typical thyroid gland of exophthalmic goiter is as a rule diffusely enlarged, and microscopically presents a picture of diffuse parenchymatous hypertrophy and hyperplasia.

5. Although iodine deficiency apparently is of no significance in the production of exophthalmic goiter, the administration of iodine to patients wth exophthalmc goiter produces temporary clinical improvement which is associated with involution of the hyperplastic thyroid gland.

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Discussion

Dr. A. P. Jones, *Roanoke:* It is always a pleasure to have a condition with which we are all more or less familiar taken up, not from the technical standpoint of operative treatment but from the standpoint of a critical study of causation and pathology. As Dr. Jones has told us, we have accumulated very little more knowledge as to the actual cause of hyperthyroid conditions than we had a good many years ago. From the standpoint of the pathological condition, the work of Reinhoff, which Dr. Jones has described to you, has seemed to me to be of very great interest as tending to simplify the rather complicated classification of thyroid conditions. A few years ago I happened to hear quite a lengthy discussion of the classification of thyroid diseases. At its close Dr. Crile got up and said that, so far as he was personally concerned, his classification was very simple —hypothyroid conditions and hyperthyroid conditions. That is very much the same result which Reinhoff is reaching in his belief (which you have been told is contrary to that of Plummer and his associates in the Mayo Clinic), that "adenomata" of the thyroid are simply islands of hypertrophied tissue surrounded by areas of normal, or, at least, less active tissue.

That the symptoms are very much the same we all know; and that the indications for treatment, both as to the pre-operative application of iodine and the operative removal of a portion of the gland, are the same we also know. So it has seemed to me an advance in the simplification of our ideas of the hyperthyroid conditions, and personally I have been rather more impressed with the value of these than Dr. Jones seems to have been.

I certainly enjoyed this paper of his and want to thank him for this very comprehensive and interesting resumé of our knowledge on the subject.

Dr. Carrington Williams, *Richmond:* I am very glad to have heard Dr. Jones' paper on Exophthalmic Goiter and have enjoyed his discussion very much.

I think that Rienhoff has presented a very interesting conception of toxic goiter, and I am sure that he is right in saying that a number of cases of nodular goiters are in fact exophthalmic goiters which have the hyperplasia in local areas. However, I do not agree with him in feeling that practically all of the toxic nodular goiters are really exophthalmic goiters. It is important to realize that the course of exophthalmic goiters runs in cycles so that some cases will apparently improve very much and seem almost well for a time and then have another exacerbation of the disease. Lugol's Solution will bring on a remission of the symptoms and produce a favorable time for operation. On the other hand, the course of toxic adenomas is a more even one and, while we give Lugol's Solution to these patients, we do not expect the marked improvement which we get with the exophthalmic goiters.

I should like to mention two instances of true exophthalmic goiters in which the response to Lugol's Solution was very slight. The first case was one to whom Lugol's Solution had been given over a long period of time and then abandoned. When we gave the Lugol's Solution in the hospital we did not get the typical drop in the toxic symptoms. It is undoubtedly true I believe that the maximum improvement follows the primary administration of Lugol's Solution. The other patient was a typical case of exophthalmic goiter but it was complicated by a rather marked thyroiditis. Lugol's Solution was given to this patient for the first time but she did not have a remission of the symptoms. She was operated on and a very considerable infiltration of polymorphonuclear leucocytes was found throughout the gland. We feel sure that this inflammatory process was responsible for the failure of Lugol's Solution.

Dr. Claude Moore, *Washington:* I feel that it is hardly fair, in the discussion of thyroid conditions, for the whole field to be monopolized by the surgeon. There has been nothing said here about the treatment of hyperthyroid conditions or exophthalmic goiter, but since the three gentlemen who have taken part are prominent surgeons I should just like to take a minute to tell you about treatment by X-ray.

Surgeons have so long dominated the clinics and hospitals in the larger cities of the country that surgery is looked upon by the average man as the only mode of treatment. You may be interested to know that, at the last meeting of the American Society for the Control of Goiter, Dr. Pfahler reported 750 cases treated by means of the X-ray. Another man reported over 500 treated by means of X-ray. I just wanted you to know that in the larger medical centers the radiologist is sharing with the surgeon, or cutting in, to a large extent, on the treatment of this condition. I shall not take more of your time, but shall just remind you that there are other means of treatment, rather than extirpation of part of the gland by surgery. Many men have reported in the journals series of up to a thousand cases. I offer this short discussion so you may become acquainted with other means of treatment than by operation. In some hospitals. the routine procedure is so much dominated by the surgical staff that the radiologist does not have the opportunity to treat any goiter cases, or else does not wish to antagonize the surgeons by ever insisting on X-ray treatment of this condition.

Dr. Fred M. Hodges, *Richmond:* Up to five or six years ago when the surgeons of the country became more skilled in operations for goiter and up to the time when Lugol's Solution became generally used, we had treated over five hundred cases with the X-ray. I believe that if the surgeons had not bettered their technique, X-ray would still have a very definite place in the treatment of this disease. I, however, believe and have believed for the last five

years that surgery gets better results than we do. Where there is very slight hyperthyroidism, where the patient is a bleeder, or the risk of operation is very great, or where the patient refuses a second operation after there has been a recurrence, the X-ray should be used. We know that hyperplastic tissue can be very definitely affected by irradiation. Since the surgeons are getting a very small mortality, around .5 to 1 per cent as against the old mortality of 5 to 10 per cent in general hospitals, I believe these cases should be turned over to them for treatment.

Dr. Jones, closing the discussion: In closing I wish first to thank the gentlemen who so kindly discussed my paper.

Secondly, I wish to state that I am not sufficiently familiar with radiation therapy in the treatment of exophthalmic goiter to discuss it at any length. I realize, however, that there are a few cases which are particularly resistant to iodine preparation, or perhaps an occasional case of recurrent exophthalmic goiter which fails to respond to the generally accepted methods of pre-operative preparation, in which event X-ray or radium therapy may at least bring about a temporary relief of symptoms, with general improvement sufficient to enable the surgeon to proceed with relative safety.

## AN ANALYSIS OF THE WORK OF THE FIRST YEAR OF THE ALLERGY CLINIC OF THE UNIVERSITY OF VIRGINIA MEDICAL SCHOOL.*

OSCAR SWINEFORD, Jr., M. D., University, Va.

The organization of the Allergy Clinic of the University of Virginia Medical School was undertaken without particular prior interest or training in the management of the allergic patient. This study was begun with the idea that an analysis of the work of the first year of the clinic would be helpful in the future. It is the purpose of this report to emphasize a number of practical observations suggested by this analysis. Examination of the data presented indicates, for example, (1) That the allergic diseases are far more important causes of illness than is generally realized. (2) That physicians in private practice can, in a surprising percentage of instances and without special laboratory methods, determine the etiology and outline proper treatment of the allergic manifestations. (3) That the average physician should be able to diagnose and treat the allergic diseases with the same facility and confidence with which he diagnoses and treats other diseases of the cardio-respiratory, genito-urinary, gastro-intestinal, neuro-muscular and muco-cutaneous systems. (4) That the practitioner should have less difficulty than a clinic in obtaining with the patient the degree of co-operation necessary to the successful management of most allergic conditions.

Attention is called to the fact that for indigent patients requiring much of the time of the practitioner, special Allergy Clinics are conducted in connection with the Out-Patient Departments of the Medical College of Virginia and the University of Virginia Medical School.

The diseases for which the clinic was primarily organized are asthma, hay fever, angioneurotic edema, urticaria, migraine, eczema, mucous colitis, and serum sickness. It is the policy of the clinic to study any patient whose illness might be explained on an allergic basis. Accordingly, cases of epilepsy, vertigo, effort syndrome, chronic colds, gastro-intestinal dysfunction, arthritis and glaucoma have been referred to the clinic for allergic study.

Our allergic routine consists of a detailed allergic history, skin tests, and therapy based on history, skin tests, and the results of food, drug, contact, and inhalant eliminations.

The things particularly stressed in the allergic history are the chief complaint (Table III); the occurrence of allergic syndromes in either branch of the family; the concurrence of other allergic symptoms (Table IV); a description of the symptoms—their duration, frequency and severity; the events preceding the onset; daily and seasonal variations; and known precipitating causes. Then follows a systematic survey (see discussion of Table V) of the effects of foods, drugs, contact substances, temperature, humidity, effort, fatigue, and the usual environmental inhalants. In this survey are noted the effects upon the concurrent allergic conditions as well as upon the chief complaint. A detailed list of potential focal infections is made.

So far only the scratch method of skin testing has been used. Forty-four scratches are made routinely, grouped food extracts are tested on twenty-two of them, grouped inhalants on eight, grouped bacteria on three, miscellaneous individual foods and inhalants on eleven. Special tests are made when indicated. A routine for intradermal and contact or patch testing is now being prepared. All skin testing is done by, or with the materials of, the Department of Clinical Laboratories.

*From The Department of Internal Medicine, University of Virginia Medical School.

Read before the sixty-third annual meeting of the Medical Society of Virginia, at Richmond, November 1-3, 1932.

Therapy is discussed later with the analysis of the hay fever and asthma cases.

TABLE I

| | | |
|---|---|---|
| *Total Cases Reviewed* | | 245 |
| *Distribution of Cases* | Hospital | 65 |
| | O.P.D. | 54 |
| | Office | 129 |
| | Hospital and O.P.D. | 13 |
| *Total Number Visits, office and O.P.D.* | | 1,081 |
| *Color* | White | 226 |
| | Colored | 19 |
| *Sex* | Male | 107 |
| | Female | 138 |
| *Allergic Family History* | Unilateral | 112 |
| | Bilateral | 31 |
| | Negative | 45 |
| | Not Noted | 57 |
| *Other Allergic Conditions* | Present | 179 |
| | Absent | 66 |
| *Diagnostic Study* | Complete | 58 |
| | Current | 50 |
| | Incomplete | 137 |
| *Estimated Improvement* | 100% | 32 |
| | 75%+ | 54 |
| | 50%+ | 25 |
| | Negligible | 26 |
| | Not estimated | 108 |

The total number of cases reviewed was 245 (Table I). Of this number sixty-five were examined in the Hospital, fifty-four in the Out-Patient Department, and 129 in the office. Thirteen were seen both in the Hospital and the Out-Patient Department. The total number of office and Out-Patient visits was 1,081. The total number of days in the Hospital was 617, but considerably less than half of this time was devoted to the diagnosis and treatment of the allergic conditions. Every case was studied by the personnel of the Allergy Clinic. A few of the office cases were seen prior to the organization of the clinic.

Two hundred and twenty-six were white and nineteen were colored. There were 107 males and 138 females.

The family history was positive for one or more of the allergic diseases in one branch 112 times, in both branches thirty-one times, and was negative forty-five times. It was not recorded in fifty-seven cases. The family histories are in accord with the generally accepted dictum that the capacity for sensitization is inherited as a dominant characteristic.

Other allergic conditions were present in 179 cases and were absent or not noted in the other sixty-six.

The diagnostic study was completed in fifty-eight cases, is current in fifty, and was incomplete in 137. By completed diagnostic study is meant that the causes of the chief complaint seem to have been determined. A current diagnostic study means that the patient is still under observation and is carrying out diagnostic procedures now. An incomplete diagnotic study means that the patient stopped coming to the clinic before his diagnostic schedule was completed. Seventy-five per cent of the incompletely studied office and Out-Patient cases were seen less than three times. However, five attended regularly and faithfully for ten or more visits. The hospital cases have not been followed except in a few instances, as most of them were from distant communities.

There are several reasons for including the incompletely studied cases, despite the fact that they seemingly reflect unfavorably upon the result of the year's work. In the first place, they help to show the volume and scope of the work done in the Clinic. This is less important than the fact that with most of them the cooperation necessary to their successful management was not obtained. It is believed that the difficulties which prevented this cooperation would be far less between patient and family physician than between patient and clinic.

Improvement was estimated in 137 cases, forty-six of which were incompletely studied. Thirty-two were entirely freed from symptoms, fifty-four were thought to be at least 75 per cent improved, and twenty-five were appreciably (50 per cent) benefited. In twenty-six improvement was negligible. In 108 cases there were no data upon which to base an estimate. Of these, eighty-eight were incompletely studied.

These estimations were based upon the condition of the patient at the time of the last visit. They are not intended to represent the final therapeutic results for these cases. Improvement was not recorded in any case unless the character of the complaint or the diagnostic status indicated a reasonable permanence of the benefits. The characteristic variations in the severity and frequency of most allergic symptoms do not permit accurate mathematical evaluations, particularly since most of patients have been under observation only a few weeks or months. Accordingly, the degrees of improvement reported are simply estimates made with full cognizance of their potential inaccuracies.

TABLE II

Duration Chief Complaint

| Duration | Less than 1 Mo. | 1-3 Mo. | 3-6 Mo. | 6-12 Mo. | 1-2 Yrs. | 2-5 Yrs. | 5-10 Yrs. | Over 10 Yrs. | Not Noted |
|---|---|---|---|---|---|---|---|---|---|
| No. Cases..... | 19 | 8 | 11 | 5 | 20 | 53 | 45 | 68 | 16 |

Age Distribution

| Age Periods | 1-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | Over 60 |
|---|---|---|---|---|---|---|---|
| No. Cases..... | 12 | 29 | 82 | 42 | 42 | 17 | 12 |

In Table II, the duration of the chief complaint and the ages of the 245 patients are tabulated.

Table III

Chief Complaint

| *Complaint* | *No. Cases* |
|---|---|
| Angioneurotic Edema | 13 |
| Asthma | 75 |
| Eczema | 17 |
| Effort Syndrome | 1 |
| Epilepsy | 1 |
| G. I. Dysfunction | 8 |
| Glaucoma | 2 |
| Hay Fever | 84 |
| Headache | 3 |
| Migraine | 16 |
| Mucous Colitis | 1 |
| Poison Oak | 1 |
| Psychoneurosis | 1 |
| Serum Sickness | 3 |
| Urticaria | 18 |
| Vertigo | 1 |

The incidence of the chief complaints is listed in Table III. In several instances, notably glaucoma, headache, psychoneurosis, effort syndrome and vertigo, the patients were examined to determine whether the complaints could be explained on an allergic basis. None was so explained. The case of poison oak was referred to the clinic with a tentative diagnosis of eczema.

Table IV

Incidence of Other Allergic Manifestations

| *Condition* | *No. Cases* |
|---|---|
| Angioneurotic Edema | 21 |
| Asthma | 40 |
| Eczema | 24 |
| Food Idiosyncrasy | 57 |
| Hay Fever | 64 |
| Migraine | 38 |
| Mucous Colitis | 13 |
| Serum Sickness | 2 |
| Urticaria | 65 |

| No. Per Case | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| No. Cases | 66 | 83 | 47 | 40 | 3 | 5 | 1 |

Table IV shows the number of times other allergic conditions were associated concurrently, or previously, with the chief complaint. At the bottom of the table is an analysis of the number of cases in which no, or one, two, three, four, five, or six other allergic conditions were associated with the chief complaint. The incidence of associated allergic conditions is 72 per cent.

Table V

Etiological Factors Determined by History Alone

| *Factors* | *No. Times* |
|---|---|
| Contact Substances | 11 |
| Drugs | 12 |
| Foods | 150 |
| Inhalants | 136 |
| Physical Agencies | 100 |
| Focal Infections | 72 |

Positive history of probable etiological factors in 225 cases.

In 225 cases (90 per cent), one or more factors of possible etiological significance were recorded in the history. These factors are classified and their incidence presented in Table V. Since a positive etiological diagnosis was established in only sixty-seven cases (Table IX) it is obvious that in many instances this possible etiological significance constituted merely a diagnostic lead or hint. Contact substances are soaps, chemicals, poison oak, wool, silk, etc., by which the skin may be irritated. Drugs include any oral, intravenous or local remedies, as well as therapeutic sera. Inhalants include pollens, animal epidermals, powders, dusts, fumes and smoke. Physical agencies include heat, cold, moisture, sunlight and pressure. Under focal infections are included all those cases with a history indicative of current infection in the nose, throat, teeth, bronchi and prostate.

TABLE VI
ANALYSIS OF ASTHMA AND HAY FEVER CASES

| | *Asthma* | *Hay Fever* |
|---|---|---|
| *No. Cases* | 75 | 84 |
| *Diagnostic Study* | | |
| Complete | 9 | 30 |
| Current | 17 | 16 |
| Incomplete | 49 | 16 |
| *Seasonal* | 13 | 48 |
| *Perennial* | 50 | 34 |
| *Effective Therapy* | | |
| Dust Extracts | 3 | 0 |
| Pollen Extracts | 6 | 27 |
| Inhalant Avoidance | 27 | 16 |
| Food Avoidance | 23 | 14 |
| Foci Removed | 8 | 3 |
| Physical Therapy | 6 | 1 |
| Hygienic | 7 | 7 |
| Symptomatic Only | 8 | 3 |
| *Estimated Improvement* | | |
| 100% | 2 | 11 |
| 75%+ | 19 | 21 |
| 50%+ | 8 | 10 |
| Negligible | 12 | 4 |
| Not Noted | 34 | 38 |

In Table VI the hay fever and asthma cases are analyzed. Two-thirds of the asthma cases and nearly half of the hay fever cases had incomplete diagnostic studies.

The seasonal cases include those who have symptoms regularly at certain times of the year and are as regularly symptom free at other times.

The therapeutic procedures which seemed to cause an amelioration of symptoms are noted. In many cases several of these procedures were used concurrently. In most cases there has been no opportunity to determine the relative value of each. In every instance noted the improvement seemed to result from the therapy employed. The same general plan of therapy was used for the other allergic diseases. The dust and pollen extracts were made in the clinic. In no case did bacterial vaccines seem helpful. By inhalant and food avoidance is meant the avoidance of those inhalants and foods (1) which were found by history to cause symptoms, (2) which gave a positive skin test or (3) which are statistically common causes of asthma, hay fever or other allergic symptoms.* Physical therapy included ultra-violet light, infra-red heat, hot and cold baths and foreign protein shocks. Hygienic measures were directed toward the correction of fatigue, constipation, nutritional abnormalities, etc. Symptomatic remedies were adrenalin, ephedrine by mouth and locally, aspirin, whiskey, expectorants, atropine derivatives and asthma powders. A number of the asthma patients were taught to give themselves adrenalin at home. It is felt that this materially shortens the duration and lessens the severity of the individual attacks. Where "Symptomatic Only" is recorded, all other measures were unsuccessful or were not necessary, as in serum sickness, acute urticaria, and acute angioneurotic edema. The foci removed were in the nose and throat, and were obvious from history and physical examination. One of the hospital rooms has been outfitted with an air filter, cotton bedding and kapok pillows. Several patients have used it with satisfactory temporary relief, especially during the ragweed season.

Improvement was 72 per cent or better in twenty-one of the forty-one cases of asthma in which it could be estimated. In eight there was appreciable (50 per cent) improvement. In twelve no benefit was noted. In only twenty-six cases was the diagnostic study current or completed.

In the hay fever group eleven of the forty-six whose improvement could be estimated obtained complete relief. Twenty-one were 75 per cent and ten were appreciably (50 per cent) relieved; only four were unrelieved.

The cases "Not Noted" are those which were not seen after treatment was begun.

Only twenty-six of the fifty-two asthma and forty-one of the eighty hay fever out-patients were seen more than twice. When due allowances are made for these obvious reasons for poor results, the appreciable improvement (50 per cent or over) in twenty-nine asthma and forty-two hay fever cases is far from discouraging. These figures illustrate very clearly the necessity of explaining to the patient at the beginning of the study that satisfactory improvement may not reasonably be expected without prolonged, detailed, and careful observation.

In Table VII the cases of angioneurotic edema, eczema, migraine, urticaria and gastro-intestinal dysfunction are analyzed. The only important observation from these small groups of incompletely studied cases is that in each group at least three cases were greatly (75 per cent to 100 per cent) improved by therapeutic measures (see discussion of Table VI) based on allergic study.

Perhaps the commonest prevalent misconception about allergic diseases is that an etiological diagnosis and rational treatment are impossible when the skin test is negative. The upper part of Table VIII shows that twenty

*Common allergenic inhalants: Face powder, flour, dusts, kitchen smoke, feathers, horse, dog and cat emanations, pollens.
Common allergenic foods: Milk, eggs, wheat, tomatoes, citrus fruits, chocolate, nuts and berries.

TABLE VII

Analysis of Other Allergic Cases

| Disease | Angio-neurotic Edema | Eczema | Migraine | Urticaria | G. I. Dysfunction |
|---|---|---|---|---|---|
| No. Cases | 11 | 18 | 16 | 18 | 8 |
| Diagnostic Study: | | | | | |
| Complete | 4 | 0 | 2 | 5 | 1 |
| Current | 1 | 2 | 5 | 5 | 2 |
| Incomplete | 6 | 16 | 9 | 8 | 5 |
| Effective Therapy: | | | | | |
| Contact Avoidance | 1 | 0 | 0 | 1 | 0 |
| Food Avoidance | 3 | 5 | 4 | 7 | 4 |
| Drug Avoidance | 2 | 0 | 0 | 0 | 0 |
| Foci Removed | 1 | 1 | 1 | 3 | 1 |
| Physical Therapy | 0 | 1 | 0 | 3 | 0 |
| Hygienic | 0 | 1 | 2 | 1 | 0 |
| Symptomatic Only | 4 | 1 | 1 | 9 | 1 |
| Estimated Improvement: | | | | | |
| 100% | 5 | 1 | 1 | 6 | 1 |
| 75%+ | 2 | 4 | 2 | 2 | 2 |
| 50%+ | 0 | 1 | 2 | 1 | 1 |
| Negligible | 0 | 2 | 2 | 1 | 1 |
| Not Noted | 4 | 10 | 9 | 8 | 3 |

Other Conditions: Epilepsy, vertigo, mucous colitis, glaucoma, effort syndrome, psychoneurosis=Incomplete.

TABLE VIII

Analysis of Greatly Improved Cases with Negative Skin Tests by Chief Complaints

| Complaint | Improvement | |
|---|---|---|
| | 100% | 75% |
| Angioneurotic Edema | 5 | 0 |
| Asthma | 0 | 7 |
| Hay Fever | 2 | 3 |
| Urticaria | 5 | 1 |
| Eczema | 3 | 1 |
| Migraine | 1 | 1 |
| G. I. Dysfunction | 1 | 2 |
| Serum Sickness | 3 | 0 |
| Total | 20 | 15 |

Relation of Skin Test to Improvement

| Skin Test | Per Cent Improvement | | | |
|---|---|---|---|---|
| | 100 | 75 | 50 | Neg. |
| Positive | 10 | 34 | 12 | 8 |
| Negative | 20 | 15 | 13 | 18 |

cases with negative skin tests were completely relieved and fifteen greatly (75 per cent) benefited. In the whole series of 245 cases thirty-two were completely relieved and fifty-four greatly (75 per cent) benefited. In other words, two-thirds of the completly relieved and over one-fourth of the 75 per cent relieved cases had negative skin tests. The lower part of Table VIII shows that fifty-six of the improved cases had positive skin tests and forty-eight had negative tests. The inference is that, whereas the positive skin test, as a rule, materially shortens the diagnostic time, it is not necessary to a satisfactory etiological diagnosis. In a number of cases with positive skin tests, the allergen later shown to be responsible for the symptoms did not give a positive reaction. This was especially true of eggs, milk, and feathers. No doubt the incidence of diagnosis by skin tests will increase markedly when our planned improvements are put into use.

Table IX

Etiological Diagnosis

| *How Determined* | *No. Cases* |
|---|---|
| History | 162 |
| Skin Test | 98 |
| Food and Drug Avoidance | 50 |
| Inhalant and Contact Avoidance | 33 |
| Focal Removal | 19 |

| *Results* | *No. Cases* |
|---|---|
| Positive | 67 |
| Probable | 117 |
| Negative | 38 |
| Not Noted | 23 |

The methods used to establish an etiological diagnosis, the number of times each seemed helpful, and the number of cases in which the

diagnosis was positive, probable, or negative, are shown in Table IX. It is obvious from the table that in some cases more than one method was necessary to determine the causative agent or agents. The apparent discrepancy between the number of positive etiological diagnoses (67) and the number of cases with completed diagnostic studies (58) is explained by the fact that in a few of the cases with both hay fever and asthma a few symptoms persisted after removal of the chief etiological factors.

Instruction in allergic disease consists of didactic lectures, and discussions of allergic cases on ward rounds and in the Out-Patient Department, as a part of the regular curriculum for Internal Medicine.

In addition, there is a senior year elective course in Clinical Allergy which consists (1) of actual clinical work with hospital and clinic patients, under close supervision, and (2) at least fifteen two-hour conferences devoted to detailed discussions of history taking, diagnosis, treatment, pathological physiology, relationship of allergy to immunity, behavior of pollen, preparation of pollen and dust extracts, skin testing, physical allergy, differential diagnosis and symptomatology of the various allergic disorders, and illustrative points of current cases. Appropriate references to the literature of each of these topics are assigned. Each student takes the history, does the skin tests, administers and makes the dust and pollen extracts, superintends the physical therapy, and follows the course of each patient he sees. Each member of the group is required to spend sixty hours in this work.

### Summary and Discussion

1. The work of the First Year of the Allergy Clinic in the University of Virginia Medical School is reported.

2. Two hundred and forty-five cases were analyzed and the results tabulated. One hundred and eleven of the one hundred and thirty-seven cases in which improvement could be estimated were appreciably benefited. Over half the office and Out-Patient Department cases did not return after the first or second visit. Allergic study was sought for sixteen different chief complaints. Other allergic conditions were associated with the chief complaint in 75 per cent of the cases. Factors of possible etiologic significance were elicited in the history in 225 of the 245 cases. Twenty of the thirty-two completely relieved and fifteen of the fifty-four greatly relieved cases had negative skin tests. A brief outline of the plan of the instruction in allergic diseases is included.

3. Examination of the data presented suggest the following somewhat practical observations:

(a). The allergic diseases are far more frequent primary or contributing causes of illness than is generally realized.

(b). Attention to the general health of the allergic individual is important.

(c). The successful management of most allergic conditions demands prolonged, detailed and painstaking cooperation between patient and physician.

(d). The fundamental principles underlying the recognition, etiological diagnosis, and treatment of the allergic conditions are just as easily mastered and applied as are those of any other disease group.

(e). Gratifying improvement can be obtained in a large percentage of cases by having the patient avoid those foods, drugs, inhalants, contact substances or physical agencies which a careful history or statistics suggest as possible causes of the symptoms.

(f). For those who wish them, inexpensive sets of pollen, food, and animal epidermal extracts for cutaneous testing can be obtained from any of the leading drug houses. The directions which come with the sets are brief and explicit. Treatment based on the results of these simple tests often produce brilliant results.

(g). The average physician should be able to diagnose and treat allergic diseases with the same facility with which he diagnoses and treats other diseases of the cardio-respiratory, genito-urinary, gastro-intestinal, neuro-muscular and muco-cutaneous systems.

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## HUMAN OVARIAN RESPONSES TO EXTRACTS OF PREGNANCY URINE—PRELIMINARY REPORT.

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The effects of injections of pregnancy urine and its extracts upon the ovaries of mice,[1] of rats,[1-2] of rabbits,[3-4-5] of ferrets,[6] of guinea pigs,[7] of dogs,[8-9-10] of monkeys,[9] and of fowls[11-12] have been described in detail. Engle[9] concludes: "The response of the genital system to an-

terior lobe principles is the same in no two species of animals which have been investigated." The hemorrhagic ovarian responses (HVR II and HVR III) of certain of these animals have made possible satisfactory biologic tests for pregnancy. Dosage, route of administration and the physiologic state of the ovary condition the response in a given species; extracts of the anterior lobe of the pituitary, implantation experiments, and extracts of pregnancy urine have not produced uniform responses in the same species. These varying factors occasioned the predication of Prolan A and Prolan B by Zondek and, subsequently, there has arisen much controversy over the existence of two separate sex hormones in pregnancy urine. Engle[9] states: "Since it appears that the best follicle stimulating extract tested to date will produce lutein tissue in the rodent with continued injections, the physiologic state of the receptor organ rather than the nature of the active principle accounts for the dual responses."

In view of the beginning employment clinically of certain extracts of pregnancy urine, said to contain anterior pituitary sex hormones, and with the accumulation of data of dissimilarity of ovarian responses in different species to these extracts, and, since no study of the response of the human ovary to these extracts had been made, a study of the responses of the human ovary to such extracts was begun about two years ago. Dr. J. P. Pratt,[16] of Detroit, had been impressed simultaneously with the need of this study, and his cooperation and help has been of extreme importance in pursuing these problems. We are indebted also to Dr. E. A. Sharp, of Parke, Davis and Company, who supplied us generously with various lots of an extract of pregnancy urine (Antuitrin-S) which was used in these experiments. References[17] to our unpublished work and results have been made.

*The Problems:* The following questions regarding the possible action of so-called anterior pituitary extracts of pregnancy urine upon the human ovary suggest themselves: (1) Is the ovary stimulated? (2) If stimulation occurs, is it physiologic? (3) If stimulation occurs, does it involve primarily the follicular phase or the luteal phase? (4) Do the "hemorrhagic responses" seen in rodents and in rabbits in pregnancy tests occur in the human ovary? (5) Is ovulation affected? (6) May permanent damage be done to the ovaries, particularly in the adolescent patients? Pratt,[14] citing recent work on ovogenesis in the adult, especially that of Evans and Swezy[13] and the unpublished work of Edgar Allen (confirming ovogenesis in the human), calls attention to (7) "the careful consideration of the possible influences on continued new formation of ova in the adult ovary" that may be exerted by these extracts.

*Method of Procedure:* Patients were selected carefully in order to avoid inflammatory conditions; only those were studied in whom there was no evidence of pelvic inflammation. Such selected patients, upon whom a laparotomy was necessary, were given injections of Antuitrin-S preoperatively as detailed in chart. The majority of our patients selected was in the younger age periods. We attempted to avoid senile ovaries in this series. Patients with well regulated and known menstrual cycles were studied, in order that a correlation could be made between the time of administration in relation to the phase of the menstrual cycle. Accordingly, the time of administration has been varied. An effort has been made to obtain pre-adolescent and adolescent patients. Two of these have been included. One young woman with hyperplasia of the endometrium and resultant menorrhagia is also included in this series.

The method of administration of the extract has been uniformly subcutaneously; no preparations of sufficient purity have been available to allow it being given intravenously. As a rule, tolerance of the patient limited dosage. Reactions have enforced relatively small doses. In one case we have been able to give 8,200 r. u. with no reactions (a very satisfactory lot of extract was available). Our maximum total dosage in this series was 8,200 r. u. and our minimal dosage was 1,200 r. u. The potency of various extracts have been checked by bioassays in our own laboratory.

In order to correlate endometrial responses, curettement was done before administration of the extract and this was repeated at the time of laparotomy when the ovarian tissue was obtained. At this time a careful record was kept as to gross appearances of ovaries, and attempts were made in suitable cases to recover ova from the tubes by method of Pratt[15] and his co-workers. A section of ovary was removed for study. Serial sections at 5 micra were studied. Additional studies were carried out on these patients and included hormone

TABULATION OF CASES

| Case No. | Age Para | Diagnosis | Menstrual Cycle | Administration of Antuitrin-S in Relation to Days of Cycle | Day of Cycle Operation Occurred | Total Dosage | Gross Appearance of Ovaries |
|---|---|---|---|---|---|---|---|
| I | 28<br>2–0–0 | Perineal laceration; retroversion. | Normal.<br>Regular. | 7–15 | 19 | 2,700 r. u. | Recent corpus luteum on right ovary; retention cysts in both ovaries; portion left ovary removed for study. |
| II | 27<br>2–0–2 | Retroversion; ch. appendicitis. | Normal.<br>Regular. | 26–33<br>Menses delayed. | 34 | 2,400 r. u. | No corpus luteum seen; multiple retention cysts in both ovaries; portion right ovary removed. |
| III | 34<br>9–5–3 | Perineal relaxation; retroversion. | Normal.<br>Regular. | 19–28<br>Menses delayed. | 33 | 3,000 r. u. | No corpus luteum seen; multiple retention cysts in both ovaries; left ovary removed. |
| V | 44 | Perineal relaxation; retroversion. | 21–28 days.<br>Flow normal. | 26–30<br>Menses delayed. | 38 | 3,000 r. u. | Large recent corpus luteum in right ovary; many retention cysts in both ovaries; left ovary removed. |
| VIII | 36<br>2–2–0 | Retroversion; varicosities of the broad ligament. | Scanty flow.<br>Regular. | 7–9* & 22–31<br>4–6 & 20–28<br>0 | 14 | 4,600 r. u. | No recent corpus luteum; multiple retention cysts; both ovaries removed because of varicosities in broad ligament. |
| IX | 23<br>3–1–2 | Perineal relaxation; retroversion. | Normal.<br>Regular. | 11–14 | 16 | 1,200 r. u. | No recent corpus luteum; portion of left ovary removed. |
| IV | 27<br>4–0–4 | Relaxed pelvic floor; retroversion. | Postpartum amenorrhea 4 mos. | 8 days preceding operation. | ..... | 4,800 r. u. | No corpus luteum seen; multiple retention cysts in both ovaries; portion of right ovary resected. |
| VI | 38 | Relaxed pelvic floor; retroversion. | Premenopause; one period in last year. | 5 days preceding operation. | ..... | 3,000 r. u. | No corpus luteum seen; both ovaries removed. |
| VII | 13<br>0–0–0 | Pseudohermaphroditism. | No menses | 4 days preceding operation. | ..... | 2,400 r. u. | Right ovary ½ adult size, with no corpus luteum or scarring from ovulation; rudimentary left ovary removed (2 ½–½ cm.) |
| X | 16<br>0–0–0 | Retroversion; ch. appendicitis. | None.<br>Nose bleeds. | 5 days preceding operation. | ..... | 3,200 r. u. | Both ovaries 2x normal size, glairy, studded with retention cysts; no corpora lutea; portions removed. |
| XI | 20<br>0–0–0 | Hyperplasia of endometrium; retroversion; ch. appendicitis. | 6 weeks amenorrhea following 1 month of menorrhagia. | 9 days preceding operation. | ..... | 8,200 r. u. | |

*This patient received 1,200 r. u. theelin during two intervals between Antuitrin-S series.

concentration tests on the blood for follicular hormone and for so-called anterior pituitary hormone, before and during administration of extract, and studies of urinary excretion were made.

*Microscopic Appearance of Ovaries:* We shall not attempt a detailed description nor shall we furnish microphotographs. These shall be delayed for more complete reports and shall wait upon a larger accumulation of well-correlated endometrial, ovulational, ovarian, blood and urinary studies. Studies on the germinal epithelium and possible ovogenesis must also be postponed—due to their as yet fragmentary character.

1. *Vascularity* was not increased apparently.

2. *Hemorrhage* did not occur in any of our specimens.

3. *Hemorrhagic* responses were not observed. Nothing suggestive of HVR II or HVR III was observed. There was nothing resembling a "positive pregnancy test" response observed.

4. No evidence of *lutein stimulation* was observed.

5. *Atretic follicles* in various degrees of degeneration were common and increased in number.

6. All maturing follicles apparently showed follicle degeneration.

7. Piling up of granulosal cells in follicle cysts was observed; degeneration was occurring in these cells.

8. Most sections showed many early corpora candida.

Three cases deserve special mention: Cases VII, X, XI. Case VII allowed a study on an immature ovary. Here no HVR I, II, or III were observed. Only an occasional atretic follicle was found. Case X was a girl, sixteen years of age, who had never menstruated. The findings were similar to findings in the adult ovaries described above. Endometrium removed at the time of ovarian tissue showed a mild hyperplasia. Case XI received a curettage before administration of Antuitrin-S. Microscopic examination showed hyperplasia of endometrium. After nine days of Antuitrin-S administration, during which time a total of 8.200 r. u. was given, curettage was again done (at time ovarian specimen was obtained) and still showed definite hyperplasia of endometrium. Sections of ovary showed many follicle cysts with piling up and degeneration of granulosal cells, many atretic follicles, many corpora candida, no luteinization, and no corpora lutea.

*Comments:* Our results in this small series are in apparent accord with Engle's[9] observation of ovaries of monkeys: "The same aqueous soluble pyridine extract which causes a luteinized ovary in a mouse, a slightly luteinized ovary with many large follicles in the rat, will produce no luteinization in the monkey ovary, but will activate every follicle, many of which become cystic."

It might be deduced from our small series that Antuitrin-S does not form luetin* tissue in the human ovary and thereby progestin formation does not result. It would seem reasonable that it perhaps inhibits luteinization and produces an increased amount of follicular hormone. Granted that in certain cases it does stop temporarily bleeding in hyperplasia of the endometrium, it would seem reasonable to assume that, instead of correcting the unbalanced action of folliculin (Burch[18]), it aggravates it. The administration of Antuitrin-S may even produce a hyperplasia of the endometrium by increasing folliculin and inhibiting progestin formation. The failure of Antuitrin-S to change the endometrial pathology, as well as the ovarian pathology, while at the same time in certain cases checking the bleeding and causing an irregular interval of amenorrhea, may indicate that hyperplasia of the endometrium may cause bleeding under certain conditions (decreased folliculin?) or amenorrhea under other conditions (increased folliculin?).

The stimulation of follicles ending in degeneration cannot be said to be a true physiologic stimulation; it is rather follicular degeneration.

*Summary:* Ovarian responses in eleven women and girls to Antuitrin-S are reported. In our series no luteal stimulation and no "hemorrhagic responses" are observed. The response in immature and adolescent ovaries is not more marked than in the adult ones. Follicle activation apparently occurs, terminating in atretic degeneration and corpora candida formation.

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## GROWTH AND DEVELOPMENT.*

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The modern pediatrician has a great responsibility resting upon his shoulders in that the future generations are the product of his care. To a great extent he is responsible for their proper growth and development. There are many factors at work which influence it. Some of them are well studied and understood, while still others, of course, under our present social customs are quite uncontrollable. It behooves us as physicians to have a knowledge of all these factors and prevent in so far as possible anything which impairs growth and development.

It is my purpose to go over some of these factors and indicate where our duty lies, where our knowledge is lacking, and emphasize the full practice of what is known in promoting proper growth and development.

### Heredity

Every child is endowed by heredity with certain possibilities of growth and development. These potentialities may be a little more or a little less than the average. Of course there is very little that we can do about inherited characteristics, but there is often necessary a bit of common sense advice on our part, as, for instance, when a distressed mother brings her child to the office with a note from the school nurse or doctor saying that her child is ten pounds underweight and should be at least three inches taller. The child is the picture of health and one look at the parents will tell us that the child never will fit into the charts tabulating average heights and weights for the given ages. The use of these charts has been a great service in picking out undernourished children but their general use by untrained workers is an abomination.

### Environment

Growth and development may be modified greatly by the child's environment. We as physicians are able to do too little in the way of changing an unsuitable environment, but our social service workers are doing a great work. All children in so far as possible should be cared for in their own home, for the best insurance of happiness and useful citizenship that any child can have is a happy home life with understanding parents, and particularly an understanding and affectionate mother.

### Child Guidance

The proper guidance of our little patients involves a certain knowledge of child psychology on the part of the physician in order that he make a proper interpretation of emo-

*Read before the George M. Kober Medical Society, February 22, 1932.

tional reactions and behavior problems. The parents control the destiny of these plastic little lives and we should be able to instruct them intelligently. Punishment should not be administered for emotional outbursts resulting from physical or mental fatigue with the false belief that the child has an uncontrollable temper. Mental and physical slowness may be mistaken for stubbornness, or "inability to comprehend" for disobedience. A child with St. Vitus dance can't sit still, so it would be unjust to punish him for disobeying a command to remain quiet. The future of these children can be ruined because of the inability of the parent to handle such conditions. Physicians are the ones to enlighten these parents. Child guidance clinics are being established throughout the country and, as a result, many lives should be profoundly influenced which have hitherto been marred by an improper understanding of child psychology. Parents are taught that the only way to mould the lives of their children so that they will mature as stable individuals emotionally, intellectually, and physically, is to acquire a sympathetic understanding of the child's point of view by meeting him on his own mental level. The child's world is ever enlarging and changing and the parents must realize that it is their duty to guide and broaden his experiences, even though these experiences have long since ceased to be interesting to them. Only by such sympathetic activity on the part of the parents can we insure proper mental growth.

### Pre-Natal Care

There are certain pre-natal conditions which influence growth and development. Syphilis notably can be detected and treated prior to birth and bring about a normal child. It is estimated that childhood syphilis has a range of three to five per cent.

Prematurity influences growth and development. Good pre-natal care can greatly reduce the incidence of prematurity. At the recent White House Conference it was pointed out that our maternal, fetal, and neo-natal death rates are still too high and that there has been very little decrease in the last decade.

### Early Infant Care

Our knowledge of the processes of growth and development during the first few weeks of life is inadequate, and particular study should be given to this period. Half of the infants who die in the first year of life die during the first month. The infant from the moment of birth requires adequate medical attention just as much as does the mother.

### Nutrition and Diet

Nutrition is the most important factor influencing growth and development. In the past decade fewer branches of science have made greater progress. For many years it was believed that fat, carbohydrate, protein, salts, and water were all that was necessary for growth and development.

In 1897 it was demonstrated that beriberi, the nutritional disease of the Orient, was caused by a diet of polished rice. Professor G. Eijkman, of the University of Utrecht, demonstrated that there was a substance in the rice polishing which protected against the disease, and a few years later Funk suggested the term vitamin.

For hundreds of years it has been known that certain diets of stale foods caused scurvy among sailors, soldiers, and prisoners. Moreover it was discovered that fresh vegetables and fruits would promptly cure scurvy. As a result, vessels, embarking on long voyages were required to have an adequate supply of lime juice aboard. It is said that the term "limey" applied to the British soldiers and sailors derived its origin from this custom.

We are now in possession of knowledge which makes it possible for us not only to promote growth and development in young children, but at the same time to prevent nutritional diseases which greatly impair both. We recognize the existence of at least six vitamins, and the principal foods from which they are derived are known. Vitamin A, derived chiefly from butter, cream, egg yolk, and fresh vegetables, especially carrots, is known to protect against infection, particularly with reference to the mucous membranes of the eyes, intestinal tract and upper respiratory tract, including the sinuses. Vitamin B, in which whole grain cereals, wheat germ, asparagus, tomatoes, leafy vegetables and yeast are especially rich, is an important accessory in promoting growth and preventing polyneuritis, otherwise known as beriberi. The feeding of orange or lemon juice to young infants is done for the sake of its vitamin C content, which prevents scurvy and dental caries.

More than three hundred years ago Glisson

first described rickets, but it has been only in the past two decades that we have known something about its prevention and cure. Vitamin D plays the major part in preventing rickets, but vitamin A also plays a part. The chief source of vitamin D is cod liver oil. About five years ago Hess and Weinstock and associates in New York and co-workers at the University of Wisconsin isolated a substance known as ergosterol. This substance, when irradiated with the ultra-violet ray, can be made to acquire a very high degree of vitamin D potency. This in part explained the fact that exposure to sunshine helps to cure and prevent rickets. These studies led to the development of Viosterol, a most valuable substance in infant feeding for the prevention and cure of rickets.

Pellagra, which formerly was a great nutritional disease, can now be prevented and cured. Fresh vegetables, milk and yeast contain vitamin G which is a subdivision of vitamin B and is the essential element. It has been called vitamin G in honor of its discoverer, Dr. Joseph Goldberger.

The superiority of breast feeding is firmly established in pediatrics, so that closely supervised breast feeding is a very important factor in growth and development. Successful breast feeding depends upon careful attention to details. One of the most important is the regular and complete emptying of the breast. If the baby can't do it, we must do it, artificially, by manual expression, a small hand pump, or the electric breast pump—which is the most efficient.

The modern mother frequently cannot or will not nurse her baby. Artificial feeding, therefore, becomes our only alternative, and in the average case this can be done very satisfactorily. Simple dilutions of whole milk and boiled water, with an added carbohydrate which is easily assimilated, will fulfill this requirement. All milk in infant feeding should be boiled. Only in this way can we destroy the organisms of milk-borne diseases. All infants, whether breast fed or artificially fed, should receive the nutritional accessories, such as cod liver oil, orange or tomato juice, and in the second half of the year suitably prepared fresh vegetables. Sun baths or carefully controlled exposure of the ultra-violet lamp help to prevent rickets and promote growth and development.

Evaporated milk may just as well be substituted for cow's milk if there is any question of the source or purity. Indeed, many pediatrists prefer it.

### Glands of Internal Secretion

There have been many exaggerations, false statements, and unsound hypotheses made in this field, although there are certain conditions well known to depend upon hypo- or hypersecretion of some of these glands. Diseases of the thyroid gland are important factors in growth and development. Adolescent goiter seems to be simply an expression of iodine starvation and in this sense a compensatory hypertrophy. Iodine in vegetables or administered in salt seems to be the most effective way to control simple goiter. The iodine content of vegetables varies considerably in different localities. Undue enthusiasm in the application of this knowledge, however, may lead to serious consequences in cases of toxic and exophthalmic goiter.

Cretinism or infantile myxedema can be recognized early in life and, since this is due to deficient thyroid secretion, the prompt and continuous administration of thyroid extract can easily control this factor of growth and development.

The thymus gland has been blamed in recent years for a great many conditions, and at present there is a great variance of opinion concerning the influence of this gland. Dr. John Lovett Morse speaks of the "thymus obsession" afflicting many physicians. Pancoast, of the University of Pennsylvania, from a recent study has concluded that the only definite and reliable sign of a potentially dangerous gland is abnormal narrowing or buckling of the trachea at the thoracic inlet. An abnormally wide shadow is no longer thought to be of particular significance because a narrow shadow can possess far more inherent danger, as may be shown in a lateral view. The antero-posterior enlargements are capable of exerting more pressure on the adjacent structures in the thorax. In any case showing symptoms attributable to the thymus enlargement we should put forth every effort to discover causes, such as laryngeal infections, asthma, post-diphtheritic and other forms of acquired or congenital stenosis, retropharyngeal or retrotracheal abscesses, atelectasis and similar conditions.

The pituitary, pineal, and suprarenal glands may less frequently interfere with growth and development. Beyond this our knowledge of the glands of internal secretion is rather lacking.

### Preventable Diseases

Preventive medicine is the great field of the pediatrician, and in this field we can do our greatest good toward the future generations in keeping our patients well by frequent, thorough, and intelligent physical examinations, begun at birth and not discontinued when the child goes to school, but continued at regular intervals through adolescence. Disease influences detrimentally the growth and development of children, and the best treatment is prevention.

Every child as soon as it reaches the age of six months should be actively immunized against diphtheria, and the Schick test should be done nine to twelve months later to be sure that the child has been protected, for we know that there is a small percentage who will not be protected by one series of inoculations. The latter should be insisted upon, and further immunization carried out if the Schick test is positive. Failure to carry this out may reflect criticism and hinder the acceptance of this great preventive measure by the laity if perchance a child should develop diphtheria who had supposedly been immunized. We do not know that the child has been immunized until his Schick test is demonstrated to be negative. The test should be repeated at the school age.

Progress is being made in the prevention of scarlet fever but it has not reached a point of perfection and permanence to justify its routine use in our pediatric practice.

It has recently been proven that measles can be prevented or modified by the use of immune serum or whole blood from one who has previously had measles.

Typhoid fever can be definitely prevented, and, while we seldom see it in a well ordered city pediatric practice, our patients who frequent summer resorts or other places where there is a possible question of the water or milk supply should be given the benefit of this preventive measure.

Smallpox, likewise, is rarely seen, but every child should be vaccinated against it. The White House Conference recommends that this procedure be carried out sometime during the first year of life. It is the practice of many to defer this until the child enters school. We should not delay this until the age of five or six years, because we would be medico-legally responsible if one of the children under our care should die of smallpox whom we had not vaccinated. And, too, the post-vaccinal phenomena of encephalitis, myelitis, severe febrile reactions, and so forth, are far less frequent in children of one year or under than they are in older children.

Intestinal parasites in certain sections of the country interfere with growth and development. With our present knowledge these infestations can be eradicated.

The incidence of summer diarrheas can be kept at a minimum through the simple procedure of boiling the milk. Formerly the deaths from this condition almost amounted to a national calamity. Until the child reaches the age of two, his milk should be boiled. Every few years milk-borne diseases are discovered—the latest of which is undulant fever.

In this paper I have tried to mention some of the conditions which influence growth and development, and to indicate where our services, not only as pediatrists but as physicians, can be of utmost value to our greatest and most sacred possession, the child.

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## DIAGNOSIS AND TREATMENT OF BENIGN AND MALIGNANT CONDITIONS OF THE UTERINE BODY.*

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Uterine fibroids, the most frequent of all pelvic tumors, possess striking characteristics, and may cause no symptoms at all or produce a multitude of complaints. They are more common after forty but are not unusual during the third decade and occasionally occur in younger patients. They tend to produce sterility, and vary in size and rapidity of growth. The large abdominal tumors rarely cause the excessive hemorrhage met with in the smaller type. Fibroids are prone to prolong menstruation and delay the menopause, but when the latter is established there is a tendency for them to cease growing and decrease in size. They are well known to be more common in the colored race. Lateral inflammatory con-

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ditions are more frequent in the myomatous than in the normal uteri. Sarcomatous degeneration, exceedingly rare, is incurable by any method of treatment, while malignant changes of the endometrium and cervix are not uncommon, but of no greater frequency than in normal uteri.

Originally all abdominal operations for fibroid tumors were done through error in diagnosis, and it was the custom in this early time upon opening the abdomen, following a diagnosis of ovarian tumor and finding instead a fibroid of the uterus, to abandon the operation because of the belief that such tumors were inoperable. The first to have the courage to remove the uterus was Charles Clay, of Manchester, England, in 1843, thirty-four years after McDowell's first ovariotomy, from which all abdominal surgery had its origin. Clay's patient died of post-operative hemorrhage, as did his second, operated upon one year later. The first deliberate hysterectomy with a correct pre-operative diagnosis was performed in this country by Kimball, of Lowell, Mass., in 1853. Lawson Tait, in 1872, advocated the removal of the ovaries as the operation for fibroid tumors, and the procedure gained in popularity and was still employed on a large scale until the late 80's.

From the beginning the types of treatment for uterine fibroids have been many and varied. Among the palliative measures known to all are the drugs ergot, stypticin, calcium and others, as well as hygiene, rest in bed and cold to the abdomen, with minor surgical procedures, such as curettage and local applications to the endometrium. I am sure the medical profession has long since given up any expectation of finding a regulative drug to control protracted uterine hemorrhage. This therapy has led to the death of no small number of women. The electrical treatment of Apostoli and others of the French school was worthless. Thus the only effective method of treating such tumors from early days up until the past two decades was surgical removal, developed with such care and skill through two generations, and the operation in experienced hands has become one of the safest of our major surgical procedures. However, taking an average of all hysterectomies as they are performed, the risk to life and health is still considerable. There is an immediate operative mortality of 5 per cent, and there is always the possibility of any one of the numerous post-operative complications. In addition there still remains the disagreeable hospital experience, and rarely does the patient take up her routine duties under six months; this, coupled with the indictment that it is after all a mutilating operation, tends to make advisable some better form of treatment. During the past fifteen years radiation has been used with success by the gynecologist in the treatment of fibroids, the favorable results increasing *pari passu* with the proper selection of cases and perfection of technique.

The indications for treatment depend upon the general condition of the patient and symptoms presented, following an accurate diagnosis made from a careful history, general examination, blood studies, pelvic and abdominal palpation, with diagnostic curettage. We have today the choice of one of the following plans: (1) Let alone and observe; (2) operate and remove: (3) radiation. The let alone and observe plan, as yet not often recommended by physicians at large, is, I believe, the best in many instances, taking all fibroids as they come to the general practitioner. When there is no obvious disturbance to health, interference is unnecessary, except for occasional observation. The mere fact of the discovery of a tumor is not sufficient indication for operation or radiation, as many believe. This fear was generated in the past through statistics describing the numerous complications associated with fibroid tumors. While I do not question these reports, I do consider the deductions and consequent practices often based upon them to be largely erroneous. The second choice—operate and remove—I believe is indicated in the following types: (1) Very large tumors and those with rapid growth; here there is always an uncertainty of diagnosis, without exploratory incision; (2) large tumors associated with pain; (3) tumors accompanied by pelvic inflammatory or any well-defined lateral disease; (4) all tumors accompanied by malignancy of the uterine body; (5) impacted tumors markedly interfering with urinary function: (6) calcified tumors causing symptoms: (7) where there is a reasonable doubt as to the exact diagnosis; (8) the definite neurasthenics or those possessed with a tumor or radiation phobia. Myomectomy is limited in its execution to a single or several definitely isolated tumors. Its mortality rate is higher than hysterectomy and, when performed where hemorrhage is a symptom, often does not bring

relief, and subsequent treatment is required. It does leave a distinct possibility of pregnancy and normal child-birth, but this is also possible in fibroids without myomectomy. The third choice—radiate—I believe is indicated (1) in all tumors with hemorrhage, from small myomatous nodules up to freely movable tumors reaching as high as the umbilicus; (2) in selected cases, some of the larger tumors; (3) in any of the operative group where the patient is not a good surgical subject. Radiation will accomplish the following—(a) control hemorrhage and check menstruation; (b) reduce the size of the tumor and in the majority of instances cause its complete disappearance; (c) occasionally in younger patients permit a return of normal menstruation and subsequent child-birth. It is exceptional for a fibroid to decrease in size without cessation of menstruation, and it is evident from this that in treating fibroids by radiation, whether in the young or old, it is necessary to bring on complete amenorrhoea in order to secure a satisfactory result. An accurate pre-treatment diagnosis is more important when radiation is considered than operation. In every instance an examination under anesthesia, with palpation and diagnostic curettage, should be made. In very large tumors it is often difficult to exclude ovarian malignancy, and when there is a history of exceptionally rapid enlargement, it can almost be assured. Submucous fibroids, presenting at the cervix, should be removed by vaginal myomectomy, and, when other tumors are present, the same general principles as to operation or radiation are to be applied. At the time of treatment the interior of the uterus is thoroughly explored with the sound, curet and polyp forceps. The radium, in the form of radon in a brass applicator, is introduced into the center of the uterine cavity. An average dose of 1,000 millicurie hours is given at one treatment, and we believe by using a large amount of radon, limiting the actual time of exposure to one hour (or less), we eliminate to a large degree the possibility of infection which is definitely increased by the prolonged application necessary with small amounts. After an interval of three or four days, the external treatment is administered. This can be given either by X-ray or radium, using two portals, front and back of the pelvis, to include the uterus and both ovarian regions. One-half erythema dose over each area is sufficient. Rarely is a second treatment necessary, but, if so, it is confined to the external route. The worst discomforts are nausea and malaise and occasionally uterine cramps. Disagreeable symptoms rarely persist beyond twenty-four hours and only symptomatic remedies are necessary. Unless the patient is too depleted from loss of blood, she can as a rule continue her usual routine activities after an average period of two weeks. When hemorrhage has persisted for a protracted period, there is a tendency to hypofunction of the hematopoietic organs and resulting aplastic anemia. These types require hospital treatment and blood transfusion just as when a hysterectomy is to be done.

The number of menstrual periods following treatment varies from one to four. An immediate cessation can be expected in 50 per cent. The most prominent symptoms attendant upon the artificial menopause are sensations of heat and cold and other vasomotor disturbances similar to those of the normal change; in none are they exceptionally severe, and in the vast majority less pronounced than in the spontaneous cessation. These symptoms, however, are often absent or slight, and are also present in 52 per cent after hysterectomy, even when one or both ovaries are preserved. The disappearance or reduction of the tumor may be expected any time within six weeks to ten years. In none of our cases, embracing approximately 1,500, has there been any malignant change developing in the uterus that we could in any way attribute to the radiation, nor have we had any deaths directly attributable to this type of treatment.

Malignant changes in the uterine body, with few exceptions, are adenocarcinoma—having their origin in the endometrium. Growths, other than the rare sarcoma which arises in the connective or muscular tissues, are usually direct extension from the cervix or adjacent visci. This disease is rarer than cervical cancer, grows more slowly and tends to remain restricted to its primary corporal origin. The ratio in our clinic is 1 to 14. Metastases to distant structures, however, are more common than in the cervical group. It is an affliction of later life and the cause, as in cancer elsewhere, is unknown. There are no definite statistics as to the influence of race on this type of cancer. It is seldom found in a full-blooded American Indian, whilein the Mongolian pelvic cancer is common. We see a large number of negroes at our clinic, but find only two with

body cancer in a group of 163, while cervical cancer is more prevalent among the negroes than the white race. Among the Jews, who usually bear many children, it is rare to encounter a cervical carcinoma, while cancer of the body is seen with the same frequency as among the Gentiles. Contrary to the general belief that myoma is often associated with body cancer, we find but twelve in a series of 1,500 patients. It is a generally accepted belief that 50 per cent of all women over the age of fifty years have fibroid changes of varying degrees in the uterus.

In the early development of adenocarcinoma of the body of the uterus the predominant symptoms are leucorrhoeal or watery discharge and bleeding; severe hemorrhages are rare. This might be present for months without pain or discomfort, leading the patient to believe that there is no serious trouble, so delaying her appeal to the physician until the characteristic disturbances of the later stages of the disease become apparent. Such signs are common to a variety of benign diseases, such as hyperplasia, polpyi, submucous myomata, senile vaginitis or pyometra, or changes within the uterus asosciated with arterio-sclerosis.

An accurate diagnosis is easily made by due attention to the history, coupled with a physical exploration. Inspection and bimanual palpation readily differentiate conditions of the vaginal wall and cervix, but vaginal metastasis from a carcinoma of the body of the uterus is common and the disease above may be overlooked. An X-ray examination of the chest is routine in each case. It is impossible to place too much emphasis on the importance of curettage and microscopic study of the tissue removed. In our clinic no cancer of the body of the uterus has escaped recognition so far as we know. Occasional patients, referred with a diagnosis of malignancy without microscopic examination, have proven to be benign and *vice versa*.

Until the past decade the universally accepted treatment for this condition was complete hysterectomy. Recently various workers, as well as ourselves, have reported results in treating early cases with radiation alone, the five year cure rate equaling that obtained by surgery, but it is still the opinion of all that, in the absence of grave constitutional complications, operation alone or combined with radiation in the early cases is the method of choice. We have no technique as a preliminary to operation which adds to the likelihood of a cure, and therefore do not advise it. Post-operative radiation is of value, however, and is used as a routine.

For convenience, the cases are divided as follows: (1) Early operable; (2) border-line inoperable; (3) recurrent after operation. When the disease is limited to the uterus, we have now two possible methods of successful treatment—first, a radical operation; second, radiation. Operation is safe and satisfactory in the majority, and recommended in the absence of any well-defined contraindication. We cannot determine by palpation alone how far the disease has invaded the musculature or whether it has reached the peritoneum. In those patients where operation is contraindicated there is a definite possibility of cure by radiation. For the remaining more advanced group and those recurrent after operation, where little is to be expected from surgery, radiation still offers a definite hope for prolonged palliation and even an occasional clinical cure.

With irradiation our main reliance is on intrauterine radium application, giving at a single exposure two to three times the dosage used for a benign fibroid. In the latter the radiation is given from a central point within the uterus, while with cancer multiple tubes of radon are used in an endeavor to thoroughly expose the entire uterine cavity to direct radiation. This is given under a light anesthesia, preceded by a thorough exploration. The stay in the hospital is necessarily longer than for a myoma. Thorough roentgen irradiation to the iliac glands and pelvis supplements the intrauterine treatment.

In the extensive, far advanced, metastatic group the treatment varies with the individual patient. It is mostly by cross-fire surface radiation, best with the X-ray unless several grams of radium are available.

The irradiation of post-operative cases should be carried out with great care. Often a loop of bowel will adhere to the vaginal scar, and application directly to the vaginal vault should be mild, the lower vaginal cavity, where metastasis often occurs, receiving the heavier dosage. Otherwise, the treatment is by surface cross-fire radiation mentioned above. In all cases frequent follow-up examinations are carried out. We have experienced no mortality that could be directly attributed to the radiation. Intra-uterine infection associated with sloughing of the growth must be watched for,

and the cervical canal kept open by dilators for drainage, if necessary.

In recent years in some clinics treating a large number both by operation and irradiation, the definite pathological classification as to grades of malignancy derived from the diagnostic curettage has been the basis for their selection of the proper type of treatment for the individual case. These have been graded according to their malignancy into groups 1, 2, 3 and 4, groups 2 and 3 being the more frequent.

*Slides.*—The first, known as papillary adenoma, grade 1, presents a low-grade malignancy but nevertheless cancer. A cure can be anticipated in this group by either radiation or operation. The second group, malignant adenoma, grade 2, reveals a greater proliferation and infolding of the gland epithelium, and the glands themselves are more numerous but there is no invasion of the stroma; it is more malignant than group 1. This group likewise is best treated by operation, but a cure can be expected by radiation. Group three is more malignant than the two preceding, with wild proliferation and infiltration of the cellular elements into the stroma. By any method of treatment—operation, radiation or a combination of the two—the results are found to be unfavorable. Hysterectomy probably offers the best chance. The fourth group is a definite anaplastic adenocarcinoma, grade 4, and more highly malignant. Metastases develop early and a cure by surgery can hardly be expected. It is highly ray sensitive, and, from the standpoint of the local condition, radiation is to be used instead of operation.

While we grade all of our malignant tumor cases, at our clinic we do not always attempt a prognosis from the standpoint of histological grading alone. We have observed extensive early metastasis in those classified as grade 1, and some of those in grade 4 have remained local for years. We have found this to be true especially in carcinoma of the cervix and bladder.

### Summary

It is obvious from what has been said regarding the benign uterine tumors that there are definite fields for operation, radiation and observation. There is too much interference with fibroid tumors on insufficient indications. Each case should be given careful consideration and the method followed which seems logically to meet the individual need. The absence of mortality and the greatly lessened economic disablement, particularly in those who must work for a living, favors radiation as a first choice when interference is indicated, especially as it in no way makes operation more difficult, should this eventually be necessary.

With uterine body cancer, as with malignancy elsewhere, the greatest hope for cure lies in an early diagnosis. In operable cases radiation alone offers a method of treatment far better than we have before realized. It obviates the primary mortality and is to be recommended in all bad surgical risks. However, we are still of the opinion that, in the absence of grave constitutional complications, operation alone or combined with radiation is the treatment of choice.

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## RUPTURE OF THE UTERUS WITH REPORT OF TWO CASES.*

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Rupture of the uterus, although of infrequent occurrence, is one of the most serious complications in obstetrics. This paper, with the report of two cases which were treated in the Obstetrical Department of the University of Virginia Hospital within a month, might serve to point out the essential features of this accident.

According to Asa B. Davis, rupture of the uterus, exclusive of those following Cesarean section, occurred 184 times in a series of 147,625 deliveries at the New York Lying-in Hospital—an incidence of one in 810 cases. In the University of Virginia Hospital during the five-year period extending from July, 1927, until July, 1932, uterine rupture occurred six times in 2,139 deliveries—an incidence of one in 356 cases.

Multiparae are more often the victims than primiparae and the incidence increases with succeeding pregnancies due to structural changes in the uterine wall and weakness of the muscle fibres. Relaxed abdominal walls and obesity seem to be predisposing factors. Most cases occur between the ages of thirty and forty-five years. In our series the average age was thirty-four, while the average parity was six.

Rupture may occur either during pregnancy

*From the Department of Obstetrics and Gynecology, University of Virginia, and sent for publication before he left the University.

or labor, the latter occurring more frèquently. Those occurring during pregnancy are more common in the latter half, and are usually the result of a previous operation, particularly Cesarean section. According to Williams, it occurs in 1 or 2 per cent of women who have previously had a Cesarean operation. The laceration may be either complete or incomplete, depending upon whether it extends into the peritoneal cavity or involves only extraperitoneal tissue. Davis and Merz state that the complete types are three times as frequent as the incomplete.

### Etiology

From an etiological standpoint, this accident may be divided into two types:—spontaneous, and traumatic or violent. Spontaneous ruptures are those that occur as the result of the natural forces of labor due to pathological changes in the uterine musculature, while traumatic or violent ruptures are those which result from external injury. Those following operative deliveries or the administration of strong oxytocic drugs are of the traumatic type.

To understand the factors concerned in the etiology of rupture of the uterus it is necessary to understand the anatomical and physiological changes taking place in the uterus during pregnancy and labor. During pregnancy these changes are essentially those of gradual distention of the uterine cavity, followed by thinning of the hypertrophied uterine wall. Any factor which produces a weakness of the uterine muscle, such as over-distention from hydramnios or excessive size or deformity of the fetus, previous infection of the uterus, tumors of the uterine wall, such as carcinomata, and previous operations, especially Cesarean section, or the scar following removal of the uterine tube at the cornua, will predispose to rupture as the intra-uterine pressure increases. Occasionally pregnancy in a bicornate or didelphys uterus, an interstitial pregnancy, or placenta accreta results in this accident. In spontaneous ruptures occurring during pregnancy, the laceration is practically always in the upper portion of the uterus.

This is in contrast to the conditions observed at the time of labor, when the tear is usually in the lower uterine segment and clearly indicates that different etiological factors are concerned. After the onset of labor pains, the fundus of the uterus contracts, while the isthmus and the cervix are dilated from above downward, thus dividing the uterus into an upper contracting zone, and a lower zone of dilating fibers. The upper and lower portions are divided by a circular ridge of tissue—the contraction ring of Bandl. The upper portion, by its contractions, serves to expel the fetus from the uterus, while the lower portion—the lower uterine segment—dilates and passively forms the upper part of the birth canal. When a serious obstacle to the passage of the child occurs, the upper contractile portion is stimulated to more forceful contraction. As a result, particularly if the lips of the cervix are caught between the presenting part and the superior strait of the bony pelvis, powerful upward traction is exerted upon the passive lower uterine segment, which is stretched more and more and becomes thinner and thinner. As the process goes on, the lower segment becomes extremely sensitive to pressure, thereby stimulating the contractions which increase both in intensity and frequency—a vicious cycle. If the process continues, the maximum point of stretching and tensile strength of the lower segment is reached, and the uterus ruptures at this, its weakest point. Generally speaking, rupture is more apt to occur on the side of the uterus that is subjected to the greatest stretching by the presenting part. Excessive stretching of the lower segment, with subsequent danger of rupture, is therefore produced by any factor which acts as an obstruction to the passage of the child. Such an obstruction may be due to contracted pelves, impacted pelvic tumors, deformities of the fetus or abnormal presentations. A pendulous abdomen, with marked thinning of the posterior wall of the uterus by stretching, may also be a predisposing factor.

Traumatic or violent ruptures have no special mechanism, but usually occur after the lower uterine segment has thinned out. Here the laceration is the result of manipulations in a uterus whose lower portion is so thin that the slightest injury may produce a rupture. Instrumental deliveries may result in a tear through the lower portion of the uterus, a forceps blade or cranioclasp perforating the uterine wall. Rupture may follow attempts at version in neglected transverse presentations or rapid deliveries through an incompletely dilated cervix. Sometimes, the mere introduction of the hand along the side of the child causes sufficient violence to the thinned out tissue to produce a rupture.

Rupture following the administration of pituitrin may be considered as traumatic. Pituitrin is frequently employed to stimulate uterine contractions and shorten labor in cases where progress is slow. While it is true that the administration of pituitrin or allied drugs during labor is frequently successful and without complications, some cases that could be delivered without difficulty end fatally because of its employment. In general practice, where the physician's time is so fully occupied, such a method of stimulating uterine contractions in order that labor will not result in a long, tedious process, both for the patient and the doctor, might seem at first glance, excusable. However, in most instances of prolonged or slow labor, without pelvic contraction or fetal disproportion, the dystocia is usually due to some type of mechanical obstruction or malposition, which if properly treated, may allow labor to progress normally. The cause of prolonged labor or slow progress should be faithfully sought and pituitrin not administered injudiciously merely as a "time saver." Mendenhall, in 1929, was able to collect from the literature available then reports of eighty-nine cases of this accident, and it seems quite logical to suppose that many others have not been reported. Mendenhall points out that there is no dependable method of determining the severity of its action in any particular case, as its effect is extremely variable. Furthermore, there is no effective antidote when once administered, and even profound anesthesia with ether, nitrous oxide or other general anesthetic may fail to prevent its effect. He thinks that it is rarely, if ever, safe during labor and that its chief value is to the accoucheur, and not to the mother or child. Deutschmann states that there is no such thing as a "minimal dose," and that its use is "pernicious, uncertain and dangerous." Williams points out that the use of pituitrin during labor is absolutely contraindicated either in the presence of mechanical disproportion or obstruction, or before complete cervical dilatation. He felt that its use might be permissible in multiparae with uterine inertia in whom labor has ceased to progress with the cervix fully dilated and the head lying below the ischial spines, or in primiparae with the head arrested at the vaginal outlet, only a few good pains being needed for its expulsion. Even in the above conditions, the use of pituitrin may occasionally be disastrous. The uterus, instead of being stimulated to intermittent contractions, may go into a state of tetanic contraction and either rupture or interfere with placental and fetal circulation so that intra-uterine asphyxia and death of the child may result. Williams feels that its employment will eventually be restricted to the stimulation of prompt contractions of the uterus immediately following delivery to prevent further loss of blood and to the elimination of the necessity for the use of low perineal forceps. Even its use as an adjuvant to the usual medical induction of labor with castor oil and quinine is not without some danger. Williams is willing to dispense with its use entirely, except in the control of post-partum hemorrhage where it serves a very useful, and at times indispensable purpose.

### Symptoms

The symptoms of ruptured uterus during pregnancy are sudden abdominal pain and signs of shock and hemorrhage, the severity of the symptoms depending upon whether the rupture is complete or incomplete as well as the amount of intra-uterine or intra-abdominal hemorrhage. At times an impending or threatening rupture during labor may manifest itself by a restless and apprehensive attitude on the part of the patient. There may be localized abdominal pain with acceleration of the pulse and respirations. The patient may support the lower abdomen with the hands, while moderate vaginal bleeding may or may not appear.

When the rupture is complete nd sudden, the picture is usually typical and dramatic. The patient will suddenly complain of severe excruciating pain in the abdomen and of a sensation that something in the abdomen has "given away." The pain is followed almost immediately by the cessation of uterine contractions and a feeling of relief is experienced. Symptoms of shock and hemorrhage appear, and the individual rapidly passes into a state of collapse. Abdominal examination reveals the absence of uterine contractions, while the fetal outline is clearly defined and easily palpable just beneath the abdominal wall. To one side the contracted uterus may be felt as a smooth and firm mass. Rectal or vaginal examination will usually disclose that the presenting part, which was formerly palpable, has moved from the pelvic cavity.

### Treatment

During labor the symptoms of impending or threatened rupture should be carefully watched for and in cases of contracted pelves, malposition, hydrocephalus, or potential weakness of the uterine wall from previous operations, the attendant should be prepared to empty the uterus in the quickest and safest way, should the diagnosis of impending rupture be made.

After rupture has occurred laparotomy should be performed, the child delivered and the damaged uterus either repaired or removed. If the child is still in the uterus it may in some instances be delivered through the vagina, after which laparotomy may be performed. Small or incomplete tears may at times be treated by simple repair of the opening, thus preserving the uterus. Packing the uterus through the vagina to prevent further hemorrhage is to be recommended only when immediate surgical treatment is not available. The general treatment is that of shock and hemorrhage, large transfusions frequently being life-saving measures.

### Prognosis

The prognosis is grave in all instances, both for the mother and the child. In De Lee's series of eighteen cases, eleven died of shock or sepsis—a mortality rate of 61 per cent. Various authors have reported maternal mortality rates varying from 30 to 85 per cent. In our six patients, death occurred in three—a mortality of 50 per cent. Williams states that even if promptly and properly treated, the mortality rate is high, at least one-third succumbing to either hemorrhage or infection.

For the child the prognosis is even worse, and unless delivery is effected at once, it is surely lost. When the fetus is extruded into the abdominal cavity, it will usually die within a few minutes, although immediate laparotomy may occasionally save it.

### Case Reports

*Case I.*—C. S., a colored multipara, gravida 6, age 25 years, was admitted to the University Hospital on April 30, 1932, in profound shock and collapse. Five previous full term deliveries had occurred without difficulty and there was no history of previous intra-uterine manipulations or operations. The present pregnancy had apparently been uncomplicated. Labor began twenty-four hours before admission to the hospital, during which time progress seemed slow and the pains irregular. Examination by the attendant showed no definite abnormality of position or size of the baby. About one hour before admission, a hypodermic was given "to make the pains strong," following which contractions increased rapidly in intensity and duration. Suddenly the patient experienced a feeling of relief from the pains which then ceased entirely. She soon became dyspneic, thirsty and rapidly lost consciousness.

At the time of admission to the hospital, forty-five minutes later, the patient presented the picture of post-hemorrhagic shock, being pale, pulseless and dyspneic. There was moderate vaginal bleeding present. Hemoglobin determination was 20 per cent. The abdomen was distended, percussion showing flatness in the flanks and a definite fluid wave. The fetus was easily palpated through the abdominal wall, lying in the upper portion of the abdominal cavity. No fetal heart sounds could be heard, while the uterus was felt in the lower abdomen, separate from the fetus.

A diagnosis of rupture of the uterus with intra-abdominal hemorrhage and death of fetus was made and laparotomy at once decided upon. Intravenous fluids and stimulants were given and arrangements made for immediate transfusion. When the abdomen was opened a massive abdominal hemorrhage was present and the child was lying free in the upper abdominal cavity, the placenta still being partially attached to the interior of the uterus. An extensive laceration, involving the left side of the uterus posteriorly and the left broad ligament, was found, the rupture extending from the upper left margin of the fundus, just posterior to the attachment of the round ligament, down through the lower uterine segment and base of the broad ligament. The child was delivered, the uterus amputated supravaginally and the tear in the base of the broad ligament, cervix and vaginal vault repaired with mattress sutures. Because of the damage done to the left tube and ovary, these structures were also removed. The abdomen was closed without drainage. Immediately after operation the patient's condition was critical. Respirations ceased momentarily but returned following artificial respiration, administration of oxygen and stimulants. Fourteen hundred c.c. of citrated blood was given dur-

ing the operation and immediately afterwards, following which the general condition improved somewhat. Fever appeared on the first post-operative day, and the condition of the patient remained critical until her death on the tenth post-operative day, apparently from generalized infection. Permission for post-mortem examination could not be obtained.

This is apparently an instance of traumatic rupture of the uterus due to the administration of pituitrin. There was no evidence of post-maturity of the child, and the history of five previous uneventful deliveries without manipulation or instrumentation, would seem to indicate the absence of any mechanical obstruction in the birth canal, or any inherent weakness of the uterine musculature.

*Case II.*—Mrs. W. L., a white multipara, age 38 years, gravida 8, was admitted to the University Hospital on May 26, 1932, four days after the expected date of confinement. There had been seven previous deliveries, the last child being delivered by breech extraction. The patient stated that she was quite ill following this delivery, but a detailed account of the illness could not be obtained. There was no history of instrumental deliveries or uterine operations. Abdominal examination revealed a full term gravid uterus, the child in R. O. P. position and the fetal heart sounds normal. Pelvic measurements were normal and there was no disproportion between the fetal head and the pelvic inlet. Active labor pains began at nine P. M. following labor induction with castor oil and quinine at one P. M. At nine-ten P. M. the membranes presented at the vulva and were ruptured artificially, at which time the head was well below the ischial spines in a transverse position and the cervix almost completely dilated. Within a very few minutes the uterus became almost tetanic and the patient became restless and apprehensive. The pulse became more rapid although there was no external bleeding. Because of the restlessness of the patient an injection of scopolamine grains 1/200 and pantopon grains 1/3 was given at ten-fifteen P. M. The fetal head remained low in the pelvis with little progress, while the uterus remained in a state of almost tetanic contraction with only an occasional interval of relaxation. The cervix at this time was still incompletely dilated.

Examination at ten-thirty P. M. revealed two abdominal masses—an irregular one on the right side, which was thought to represent the fetal outline, and a smaller, rounded and firm mass in the left lower abdominal cavity. No fetal heart sounds could be heard. The patient now showed signs of circulatory collapse and shock, the pulse becoming rapid and thready. Slight external bleeding appeared and vaginal examination showed the head in deep transverse arrest with the cervix completely dilated. A diagnosis of spontaneous rupture of the uterus with death of the fetus was then made. In view of the completely dilated cervix and deeply engaged position of the head, delivery per vaginum with supportive treatment for shock and hemorrhage to be followed by immediate laparotomy was felt to be the procedure of choice. A large stillborn child was delivered by forceps without difficulty, following which a large amount of blood and blood-clots escaped, the placenta apparently not separating. The uterus was then well contracted and external bleeding practically ceased. After intravenous fluids and stimulants were given the pulse improved slightly. Vaginal examination showed an extensive laceration involving the entire posterior wall of the uterus on the right side with the placenta in the abdominal cavity. The condition of the patient at this time was extremely grave and, before laparotomy could be attempted, death occurred, less than four hours after the onset of labor.

No satisfactory explanation for the cause of spontaneous rupture of the uterus in this instance could be found. In the absence of definite mechanical obstruction or disproportion it seems quite logical to suppose that some weakness in the uterine wall was the underlying cause. It is possible that an injury to the lower uterine segment at the time of the previous breech extraction may have occurred and may have been a factor in the present laceration.

## Summary

1. Two cases of rupture of the uterus are presented—one following the administration of pituitrin during labor; the other occurring spontaneously during labor, for which no definite cause could be determined.

2. The high mortality rate should stimulate closer observation of the parturient woman, as prevention is more important and successful than is curative treatment.

3. The indiscriminate use of pituitrin or

allied drugs during labor is inadvisable, its field of usefulness being limited to a few clearly definite indications.

4. Laparotomy in association with stimulative and supportive treatment seems to offer the best chances for a successful outcome.

5. The prognosis is always grave, both for the mother and the child.

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## PROBLEMS OF THE ACUTE FEMALE PELVIS—DIAGNOSTIC—ECONOMIC.*

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Acute diseases of the female pelvis present ever recurring problems to the physician. They make up a considerable part of the work in the office, in the home, and in the hospital. This frequency and importance prompted this selection of the subject. At the same time, and with these acute conditions of the female pelvis as an example, I hope to emphasize a responsibility of the physician to the patient in these days of economic stress.

An acute female pelvis is easily recognized. The problem is to ascertain the specific nature and cause of the trouble. This is necessary in order to apply the proper treatment. The history is usually rather definite and is of immense value in diagnosis. The location and character of the pain will in many cases be diagnostic. Physical examination can be made by four routes, the rectum, the vagina, the urethra, and abdomen. In fact, the means and methods of diagnosis of acute diseases of the female pelvis are particularly well established.

In ascertaining the nature and cause of the trouble, we will bring to mind the organs of the female pelvis from before backward and the possible acute causative pathology.

1. Urinary system:
   a. Retention of urine in the bladder.
   b. Rupture of the bladder.
   c. Stone or stricture of the ureter.
2. Uterus:
   a. Abortion.
   b. Rupture.
3. Tubes:
   a. Acute salpingitis and pelvic cellulitis.
   b. Ectopic pregnancy.
4. Ovary: Ruptured Graafian follicle.
5. Intestines: Obstruction of the bowels.
6. Appendix: Appendix may be low and lying over the brim of the pelvis. Acute appendicitis.
7. Neoplasms:
   a. Twisted fibro-myomata.
   b. Twisted ovarian cysts.

Retention of urine is easily diagnosed if looked for. In looking for something more serious it may be overlooked. Rupture of the bladder follows injury or over-distention. A stone or stricture in the ureter manifests as its principal symptom severe pain along the urinary tract on the affected side. This pain may be reflected to the scrotum and down the thigh. In severe attacks there may be nausea, vomiting, frequent micturition and bloody urine. It is probably more important to rule out stone and stricture of the ureter in acute pelvic conditions than most any other. Turlington and others report that nearly 40 per cent of their stricture cases have abdominal scars where operation was performed under a mistaken diagnosis. In case of doubt, a complete urological examination should be made.

The history of the case and manual examination will usually determine abortion or ruptured uterus. The frequency of abortion under the present condition of society should not be overlooked. Rupture of the uterus may occur following delivery. However, a rupture or puncture is also caused by instrumentation, in many cases having been performed by the patient herself in an effort to bring on abortion.

Salpingitis is usually bilateral, and is often associated with acute appendicitis. The infection may extend from the tubes to the peritoneum and other parts of the pelvis. Lash emphasizes the fact that there is a direct communicating tract between the pelvic peritoneum and the outside world, a condition without

*Read before the Post-Graduate Medical Society, at Victoria, Va., February 28, 1933.

parallel in the human anatomy. The origin of pelvic infection is venereal, abortal, post-partum, or systemic. The venereal is caused by venereal diseases, although other microorganisms are found in addition to gonococci. Abortal and puerperal follow infected abortions and deliveries, and systemic infections are a migration of the colon and tubercular bacillus. A case of acute salpingitis has high temperature, moderately high pulse rate, flushed face, and extreme tenderness and rigidity over the lower half of the abdomen. Its onset may be by a chill. The main point in acute salpingitis is the treatment. Practically all surgeons advocate the palliative treatment, putting off operation until the acute infection has cooled off. Dannreuther says the later the operation is done the more amenable the tubes and ovaries will be found to surgical procedure.

In ectopic pregnancy the diagnosis may be easy or difficult. The air hunger, pallor, fast thready pulse, cold clammy extremities, falling blood pressure, sharp pain, and sometimes a mass found in one side of the pelvis is indicative of ruptured extrauterine pregnancy. Field says that in 60 to 70 per cent of cases there is a menstrual irregularity. The history of the case is very important, as shown by Scheffey and others who report the following percentages of etiologic factors in ectopic pregnancy from their records:

1. History of pelvic infection, 30 per cent.
2. Previous operative procedures, 37.7 per cent.
3. Ovarian and uterine growths, 8½ per cent.

The hemoglobin index is not as useful as would be expected. Dunn and Wynne have demonstrated that the hemoglobin does not get to its lowest point until forty to seventy-two hours after the bleeding begins. Farrar calls attention to the moderate rise in leukocyte count as the bleeding goes on. The Aschheim-Zondek reaction may be useful, but in acute cases the necessary time to make this test cannot be taken. An exploratory operation may be necessary for a final diagnosis.

Ruptured graafian follicles or ruptured varicocele in the pelvis sometimes produces considerable bleeding with symptoms similar to those of extrauterine pregnancy.

In intussusception of the bowels, examination of the hernial orifice should be carefully made. In this condition usually a characteristic bloody discharge from the bowels is seen, and before long a tumor can be felt. Intussusception is a disease of childhood and adolescence while volvulus occurs in older people. Symptoms of obstruction will include abdominal cramps, constipation, and later vomiting.

The appendix may extend over the brim of the pelvis and give decided pelvic symptoms. Here we usually have the earmarks of an acute appendix to guide us, such as nausea, vomiting, epigastric pain, and tenderness of the abdomen, finally centering over the appendix, later fever, and high white blood cell count with neutrophiles predominating. On account of the proximity, an inflamed appendix is often associated with a right salpingitis.

Twisting of a fibro-myomata and ovarian cysts occur in the pedunculated form of tumor. The pain is colicky and severe and located over the tumor, which may be palpated. The temperature is in the beginning low. As the condition grows worse, severe acute peritonitis develops with a rise in temperature, septic pulse and reflex vomiting. Shute says a great many cases of torsion will get well if left alone. However, it is not safe to take too many chances.

In short, a careful history of the present and past, a painstaking manual examination, and correct evaluation of symptoms will practically in every case furnish a lead and in most cases all the information necessary for an accurate diagnosis.

A large per cent of cases of acute conditions of the pelvis do not need hospitalization. The same is true of other acute diseases. There is a general tendency to rush the patient to the hospital to relieve the physician of the trouble of making a diagnosis. It is our duty to ascertain, if possible, whether a patient needs hospitalization or not. Acute salpingitis and other infections of the pelvis do better if left at home than by operative measures. It is not necessary, if we know what the condition is, to send these patients to the hospital until the time is ripe for operation. The only excuse for hospitalization of retention of urine is carelessness in diagnosis. A large per cent of cases of stricture and stone in the urethra do not need hospitalization. Ruptured graafian follicles and varicoceles may not have sufficient hemorrhage to demand more than rest in bed and routine treatment. Many incomplete abortions will complete them-

selves with little or no help. Every reasonable effort should be made to relieve obstruction of the bowels in the office or at home before the patient is sent to a hospital. Without doubt a case of acute appendicitis should be hospitalized at once. In those cases where hospitalization is necessary and in those cases of doubt, no time should be lost in giving the patient the benefit of such treatment, but in those cases where the patient will do as well or better at home, or the patient can be relieved by some measures which can be administered in the office or at home, hospitalization is not only unnecessary but is a burden. It is a burden either to the patient or to the hospital. It is a burden to the patient of moderate or limited means who pays his bill, or it is a burden to the hospital when the bills are not paid.

To determine the advice to be given for or against hospitalization under the circumstances will require the intelligent and painstaking care of the patient by the physician. This, however, is not only expected but demanded of the practitioner today. The great number of private and public hospitals require a large amount of money to properly maintain them, and the present economic conditions have had a serious effect on these institutions. The patient, however, is the center around which our professional consideration revolves. The hospital is for the benefit of the patient, and not the patient for the hospital.

The recent majority report on the cost of medical care, of which both the profession and public has heard so much, has many things to commend it and many things to condemn it. On the one hand, we would gain in the mobilization of means and professional service; on the other hand, we would lose the present competitive service which is needed to stir ambition to the further development of medicine and individual professional care to the patient, so necessary to the successful practice of the profession. Without waiting for time or experience to prove the merits or demerits of this report, we should, in the meantime, in our every day work, take every step possible and reasonable to reduce the cost of medical care to our patients. To do this, the physician must not be merely a clearing house for the hospitals and clinics, but he must be a real doctor, treating those patients which he should be able to treat, obtaining help when it is needed, and referring to the hospitals and clinics those requiring hospital facilities and clinic service.


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## POLIOMYELITIS.*

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Anterior poliomyelitis is an acute, specific systemic infection in which the most important lesions occur in the central nervous system. The actual causative organism has not been identified, but it is known to be due to a true filtrable virus, which is transmitted by secretions of the mucous membranes of the upper respiratory tract, and enters the body through the naso-pharyngeal mucous membranes. It has been shown by neutralization tests that about ninety per cent of urban people become immune to poliomyelitis by adult life. This is not as prevalent in country people. The mechanism of this immunity is not known but it would appear that it is the result of mild forms of the disease, or of healthy carriage of the virus. That intimate contact with persons harboring the virus may result in immunization, without any recognizable symptom of the disease, has been fairly well established. While it seems that a great majority of people are immune to this disease, it does occur sporadically each year, at times assuming epidemic proportions, and it is very important that we keep it in mind and recognize it early. That it is a disease of early childhood, most cases occurring before the sixth or seventh year of life, and occurs more frequently in the north temperature climates during the late summer and fall months, are factors which should make us suspicious of poliomyelitis in any child who shows such symptoms of general infection as a low grade fever, headache, and vomiting, especially if there be stiffness of the neck, rigidity of the spine and an ataxic

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tremor. A spinal puncture should then be made, which would probably confirm the diagnosis.

There are a number of different classifications of types of poliomyelitis, some depending on anatomical involvement and others on the course the disease may take. Since there are several stages of the disease, and its progress may end at any stage, it appears that the stages should best be considered separately.

Following exposure, seven to fourteen days (generally seven to ten) elapse before the first clinical symptoms of the first stage appear. This initial, or abortive, stage represents a general systemic reaction, the most important symptoms being fever from 101 to 102, headache, some disturbances of the gastro-intestinal tract, usually causing nausea and vomiting, diarrhea, or more frequently constipation, or there may be some infection in the upper respiratory tract, as an inflamed throat. The initial stage may last from 24 to 48 hours, and it may stop here. When it does stop at the initial stage, it seems that the diagnosis must be more or less presumptive. There are no characteristic diagnostic signs and there is no indication for a spinal puncture. The spinal fluid would be negative.

Very often it does progress, and at times it is so rapid that there is no first stage. Usually, however, there is a latent period of two to four days, after which there is a recurrence of fever, and other symptoms of the first stage, with increased intensity and evidence of mental irritation, indicating invasion of the central nervous system. This is the second stage, or the non-paralytic type (or preparalytic stage of paralytic type). The patient is drowsy, but easily aroused, is restless and irritable, seems apprehensive and resentful. They do not like to be moved and are easily annoyed. The child seems more prostrated than the temperature would indicate, the face is flushed, the expression is anxious, and there is frequently pallor about the nose and mouth. The *tache cerebrale* is almost always present, and sweating is pronounced.

There is definite stiffness of the neck; the patient tilts the head on the neck, but does not bend the neck on the shoulders; consequently, the head can be brought only half way forward. When the child is lifted by the shoulders the head drops back and cannot readily be raised. Tenderness and rigidity of the spine are more characteristic than stiffness of the neck. The child cannot bend its head over to knees. When he does bend, he bends from the hips. The ataxic tremor, or twitching of the muscles, develops a little later. This indicates involvement of the anterior horn cells. This may be the site of a future paralysis. This area shows general hyperesthesia, but actual pain is usually limited to the spine or to some particular group of muscles. The superficial reflexes are among the earliest altered. Their absence is significant. Deep tendon reflexes are hyperactive early and depressed later.

With the appearance of stiff neck, rigid spine or ataxic tremor, lumbar puncture should be done at once to confirm the diagnosis.

The spinal fluid is usually under moderately increased pressure (160-200 m.). It appears clear but may be slightly hazy or have a ground glass appearance. The cells are increased, usually between 50 and 250, but may be as low as 10 and as high as several thousand. Polymorphonuclears predominate early but lymphocytes increase later. Globulin is increased. (Count must be made early. Fluid is diluted with acetic acid containing small amount of some dye, as methelyne blue. Use white cell pipette.) Poliomyelitis progresses so rapidly at times that the first sign noted is paralysis. It does not always go on to paralysis, however, since it may terminate at any stage, but should paralysis occur, it is usually present by the third day of the second period. The third stage, that of paralysis, is easily identified. This is the paralytic type of case, of which there are three separate types:

The ataxic type is very rare. The motor nerve cells are not involved but there are ataxia, nystagmus and lack of coordination.

The second type is also very rare. The upper motor neurone is involved and there is flaccid paralysis.

In the third type the lower motor neurone is involved and there is a flaccid paralysis. This is the common type of paralysis, and may again be divided into the cases in which the spinal motor nerves are involved, the bulbar cases in which one or more cranial nerves are involved, and combinations of the two. This is flaccid motor paralysis and is not accompanied by loss of sensation. The legs are most frequently paralyzed. Paralysis is not only the disabling sequel of poliomyelitis but when it

affects the muscles of respiration it is the cause of death. Paralysis, either partial or complete, is due to injury or death of nerve cells.

In order to understand why poliomyelitis causes serious paralysis and to be able to treat the condition intelligently, we must know something of the pathology.

Poliomyelitis being a generalized infection, the virus is disseminated throughout the blood and there are areas of perivascular inflammation throughout the body. The most important lesions occur in the central nervous system, however. There is, primarily, infiltration of the pia-arachnoid, extending around the blood vessels of the medulla, the cord and the brain. The infiltration is in proportion to the vascularity of the area, and follows along with vessels into the cord where exudate is formed. Extensive edema and punctate hemorrhages may occur and, as a result, the gray matter of the anterior horns, to which the blood supply is abundant, is markedly affected. The anterior horn cells are involved in a destructive process, due to shutting off of blood supply by pressure on the blood vessels, perhaps partly due to direct pressure on the nerve cells of hemorrhage, edema and exudate, and also probably due to direct action of the virus. Constriction of the blood vessels causes anemia. On account of this pressure and anemia, the nerve cells degenerate. If the hemorrhages and exudate are absorbed soon enough the cells may recover function. If, however, the anemia and pressure are prolonged or excessive, the nerve cells go on to complete destruction with its accompanying loss of function.

The prognosis in a case of poliomyelitis is very uncertain. There may be marked preparalytic symptoms with no paralysis in one case: in another, the paralysis may occur in a few hours after onset and progress rapidly to fatal termination. The cause of death is most often due to progressive paralysis of the muscles of respiration. The mortality rate differs greatly in different epidemics, ranging from ten to twenty-five per cent.

The complications of poliomyelitis are rare because the acute stage is short.

The diagnosis of poliomyelitis depends upon the stage. The initial stage cannot be differentiated from other general infections.

The second, or preparlytic stage, with evidences of central nervous system involvement, is not difficult when the symptoms and signs of this stage are considered and the spinal fluid is examined. Epidemic encephalitis, tuberculous meningitis, purulent meningitis, syphilitic meningitis and meningismus must be considered in the differential diagnosis.

The third stage with its paralysis, following one or both of the other stages, should not be difficult.

The treatment of poliomyelitis resolves itself into prophylactic, and treatment of the different phases of the disease.

There is as yet no specific remedy for its prevention. Passive protection is thought to be afforded by convalescent serum. Children menaced by the disease may be given 10 to 20 c.c. subcutaneously. An active virus-serum immunity has been produced in monkeys, but this has no proved value for humans as yet.

Treatment for the first stage is no more than that for the onset of any acute infection. Most important is the recognition of the disease in the early pre-paralytic stage, with strict and early isolation. This is the best prophylactic measure, and active treatment of this condition is most effective at this time. Strict isolation, complete rest, and antipyretic measures should be instituted at once for the patient's comfort and well-being. Lumbar puncture should be done early and repeated daily to relieve pressure, and for the administration of treatment. Convalescent serum or any other treatment to do any good must be applied before cell destruction takes place. The value of convalescent serum is questionable. Park says that no disease due to a filtrable virus can be benefited by anti-serum treatment after clinical symptoms have developed. There is certainly no established proof to show that convalescent serum does any good after the cells of the central nervous system are involved. In recent reports of controlled therapeutic tests, the evidence in favor of convalescent serum is not encouraging. While its value is being weighed in the balance by some investigators, the optimistic opinions expressed by the others following uncontrolled observations cannot be disregarded, and, for lack of something better, it seems we should continue its use, if serum be available. The method of administration is about as uncertain as the value of the serum. There are difficulties in giving serum intraspinally, and the introduction of the serum into the spinal canal may

be very harmful unless it has sufficient immune properties to do a great good. There is also a certain amount of danger in intravenous administration of serum.

Intramuscular administration, if it can be as effective, is a convenient mode of access to the blood stream, and absorption of human serum is fairly prompt by this way. It does not present the alarming dangers of intraspinal and intravenous administration, and whole blood may be used. Too, it is not so important to be absolutely sure of the diagnosis.

Complete rest is essential during the first few weeks of the disease, and strictest attention must be shown to any weak muscles and proper protection given them at once by a competent orthopedist.

Convalescent serum combined intraspinally and intramuscularly should be all that is necessary. I do not see any need for intravenous administration. Ten to twenty c.c. are given intraspinally and sixty to eighty intramuscularly (or forty to sixty intravenously). Always draw out at least 5 c.c. more fluid from spinal canal than amount of serum to be injected, unless pressure be very low. Repeat serum both ways the next day if necessary.

After paralysis occurs, serotherapy fails to influence the course of the disease, and here a d r e n a l i n was used intrathecally. There seemed to be a temporary improvement of paralysis. The effect of this drug was rapid and intense, but of too short duration. It could not be given often enough. Too, there was a secondary vasodilatation which seemed to be very harmful at times. Ephedrine has since been used (Brahdy and Scheffer) and has a more prolonged effect. It may be of some definite value (50 mg. of ephedrine are added to 5 c.c. of spinal fluid and reinjected). If it can relieve the edema and swelling of the inflamed meninges and subjacent tissues, it is certainly logical to consider this a helpful adjunct to the orthopedic care of the stage of paralysis.

The most important thing is early diagnosis, early isolation and early institution of proper treatment to check the course of this disease as soon as possible and to avoid its disabling sequelae.

In conclusion, I wish to report a rather typical case, in which the results were all that could be desired:

Edward B., colored male, 5 years old, was first seen on September 25th. Four days prior to this he had had a vomiting spell, complained of headache, and seemed feverish, but got up and went the next few days as usual. For two days he was free of symptoms, until on the night of September 24th his mother noticed that he held his head in a peculiar manner. He then complained of pains about body. He was brought to my office at 8 o'clock A. M., on September 25th. He complained of pains about body and stiffness of neck, which was exaggerated when head was moved. His head was found to flex on neck but neck would not flex on shoulders. Back was rigid, and could not be bent forward; reflexes were hyperactive. Temperature was 99.6, pulse 96; he was constipated; otherwise negative. Urine showed a faint trace of albumin. Spinal fluid was clear but the cell count was 150. Globulin was increased. Six hours later his temperature was 101, pulse 104, and all symptoms and signs seen in the morning were exaggerated. He was very irritable and restless. He was given about 30 c.c. of convalescent serum intramuscularly, and on the following morning a second spinal puncture was done. Fifteen c.c. of fluid were withdrawn and 10 c.c. of serum given intrathecally and 30 c.c. intramuscularly (this was all the serum available). At that time his temperature was 99.6 and pulse 116. On the 27th, he was much better and his temperature was 99 and pulse 84. He was kept in isolation, in bed for three weeks, given sedatives and general nursing care. Recovery was uneventful and there was no sign of muscular weakness at any time.

## PULMONARY TUBERCULOSIS IN CHILDHOOD.*

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Thirty years ago Von Behring said, "Phthisis is but the last verse of a song, the first verse of which was sung at the cradle." and over twenty years ago Romer held that childhood tuberculosis, when not fatal, leads to an increased resistance against further development of the disease. In 1920, Bacmeister showed that typical phthisis after childhood does not occur except in one who has acquired such immunity in childhood, only to have it overcome later in life by the breaking down

*Read at a meeting of the Roanoke Academy of Medicine.

of an endogenous healed lesion, or the acquisition of an overwhelming dose of bacilli from the outside.

Since these men spoke, we who work in pulmonary tuberculosis have come to agree with them, and at the present time their ideas hold full sway. With Von Behring, we believe that the great majority of tuberculous adults contracted the disease in early childhood; with Romer, that most of us are protected against tuberculosis by virtue of immunity resulting from childhood infection; with Bacmeister, that the adult who is not thus protected, if he becomes infected, will have the rapidly fatal type of tuberculosis often seen in the very young and not the long drawn out type usually seen in adults. However, there are men who think that in some typical cases, the disease was contracted and has developed after adult life was reached.

The route of infection in early childhood has been a moot question since Koch's discovery, some holding that it was by way of alimentary tract most often, while others were equally positive that it was by way of the respiratory tract. We agree with the latter view and think that the infant or child most commonly inspires organisms that are being thrown into the air by the mother, some other member of the household, or intimate contact, such as a schoolmate. Probably 95 per cent of the primary infections take up their abode in the lungs, or bronchial lymph glands.

True heredity plays no part in transmission. Still births in which this disease caused death of the fetus have been known to occur; also cases of congenital tuberculosis have been reported, but these infants survived only a very short time. Phthisis is a familial disease but it is probable that the ready susceptibility of very young children plays a larger part than any other factor, such as hereditary predisposition. It is impossible to see how the babe in arms directly under the coughing mouth of the tuberculous mother could escape overwhelming infection.

In general, the child under three months in whom the tuberculin test is positive will not survive the year out, and the child under three years in whom a definite pulmonary lesion can be demonstrated will not live long, while those in the early teens have a better chance. That is, the earlier disease-producing infection occurs, the less chance the patient has. To reconcile this with Romer's theory, we think that in most cases the organism is received in small doses insufficient to produce disease, and these are received during the post-infancy period usually.

During infancy, pulmonary involvement is commonly of the miliary type and part of a general condition. Later, it may be of that or any other of four types. These are tuberculous bronchitis, tuberculous bronchopneumonia, hilum tuberculosis, and chronic ulcerative tuberculosis of the adult type. Of these the most common is tuberculous bronchopneumonia.

The difficulties encountered in making a diagnosis of pulmonary tuberculosis before it is too late are familiar to all of you, and every one agrees that in childen it is next to impossible. I can only remind you that early diagnosis is imperative and review the limited facilities at our disposal. In order of importance they are: First, accurate history with emphasis on exposure to an infected person; second, good stereoscopic X-ray films, taken in antero-posterior and oblique views, correctly interpreted; third, intracutaneous tuberculin test; fourth, auscultatory examination; fifth, sputum examination, which is put last because frequently there is no expectoration. At times one or all of these will establish the diagnosis; too often they leave us profoundly puzzled. History is always valuable, X-ray is conclusive when the lesion is clear-cut and typical. The tuberculin test when positive proves the existence of infection, but no more; it has little value when negative because so many conditions influence it thus. It is rare to find auscultatory signs in the early stages. Cough and expectoration are late manifestations and children under seven do not expectorate, so that we have to recover the bacilli from the gastric contents or from the throat by means of a swab. Common symptoms are loss of weight, loss of appetite, lassitude, fatigability and fever. Pleurisy is not troublesome and effusion is rare, as is hemorrhage.

The prognosis, touched on above, is never good but many of these patients survive, and we can help them sometimes by proper treatment.

Our most potent therapy leaves much to be desired; it consists of the usual hygienic measures, at first strict rest in bed to be modified as conditions warrant, and with this plenty of

good wholesome food and fresh air. The only tonic or other medicine of value is cod liver oil: the osterols, tablets and emulsions are not to be substituted. In addition to these measures, we have at our disposal certain surgical procedures that can be used just as in adults, though even more care is to be exercised in selection of cases. Of these artificial pneumothorax is most useful while phrenic nerve operations and rib resections are employed at times. While exposure to sunlight or ultraviolet rays is indicated in all children who have no active pulmonary lesion, we do not favor such exposure when there is any evidence of activity.

## THE ROLE OF THE PRACTICING PHYSICIAN IN THE CONTROL OF SYPHILIS.*

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The period of great interest in syphilis, which followed the demonstration of the widespread prevalence of this disease among drafted men during the World War, has tended to lapse somewhat in recent years. All of the factors that hide the problem from the public eye have been at work, and the urgent need for economy in the administration of government has resulted in the curtailment of venereal disease programs usually before other forms of health work have suffered. Because of their chronic character the need for continued interest in these diseases is of primary importance both on the part of the private practitioner and of the health officer if efforts at control are to be successful.

Education of patients in the fundamentals of sex hygiene, persistent stress on the danger of neglected syphilitic infection, and instruction in the procedure of prophylactic measures for promiscuous individuals are some of the more important preventive activities of the physician. It is also the duty of every practitioner to keep informed on modern methods of diagnosis and treatment. Support of governmental appropriations for venereal disease control work is well within the realm of duty of the profession if it is to present a solid front against these scourges. The need for free treatment or treatment at a nominal charge of those syphilitic individuals who are indigent or semi-indigent is of the greatest importance, since persons receiving no treatment or poor treatment during the early stage of syphilis are considered the chief source of danger from an epidemiologic standpoint. Despite these basic principles many localities and particularly rural districts do nothing to provide education and treatment for the public.

The actual incidence and prevalence of syphilis give emphasis to the importance of its control. The United States Public Health Service[1] estimated that there were 423,000 new cases of syphilis seeking treatment in this country each year. This figure is based on the number of such cases under observation or treatment by physicians, hospitals and clinics during a given period previously set aside for this purpose. It is accurate only in so far as the syphilitic population avails itself of treatment, and is dependent upon the facilities provided needy persons for free treatment. If the population group fails to apply for treatment because it cannot afford to meet the fees of private physicians or because no free clinics are available the incidence as ascertained by the one-day census method will be much lower than the actual rate that would be obtained if every member of the community were given a detailed examination for syphilis.

In a recent cooperative study, Clark[2] reported the prevalence of syphilis among Negroes in six counties in as many Southern States. The rate was obtained by performing a serologic blood test for syphilis on all Negroes in a given area; cases presenting a positive test were examined physically. The population was predominatingly rural and the occupation agricultural. A prevalence rate of 195 per 1,000 population was reported for the 27,131 individuals examined. The highest rate recorded was 350 and the lowest seventy-one per 1,000 population. It is of great interest to note that among 1,400 syphilitic Negroes discovered in the area of highest prevalence only thirty-three of them gave a history of any previous treatment for syphilis. If the rate obtained for the six communities is applied to the 12,000,000 Negroes reported in the United States in the 1930 census, we find that approximately 2,300,000 are infected. Figures such as these place syphilis in the first rank of importance among communicable diseases.

*Presidential Address delivered at the ninth annual meeting of the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., October 4, 1932.

1. Usilton, Lida J., Venereal Disease Information, Washington, 1930, XI, 543.

2. Clark, Taliaferro, Bulletin of the Julius Rosenwald Fund to be published.

and make its control an absolute essential unless we intend to permit the ultimate complete syphilization of this group.

The capacity of an individual to pay for treatment and the actual cost of anti-syphilitic therapy for indigent persons are factors which are of considerable importance in the control of syphilis. It is impossible from references at present available to arrive at the number of persons receiving an annual salary or income below a sum which would place them in the indigent class. This information is pertinent if the general capacity of the population to pay for medical services is to be measured. The National Industrial Conference Board probably gives the best information that can be obtained concerning the average salary of workers in the various industries. For the year 1931, this organization[3] reported average annual salaries for both skilled and unskilled workers and for both sexes as follows:

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| Public Utilities (Gas and Electricity) | $1,690 |
| Railroads (Class I) | 1,530 |
| Manufacturing Industries | 1,180 |
| Farm Labor (without board) | 420 |

It is immediately obvious that the vast majority of these wage earners could not afford to pay private fees for prolonged treatment of syphilis. Some provision for the modification of the cost of this treatment is imperative if the control program is to approach the degree of efficiency which present knowledge makes possible.

The cost of private treatment is considered in some detail by Keidel.[4] This writer estimates that the cheapest adequate medical treatment for early syphilis available in the city of Baltimore from a competent physician would amount to $305 over a period of twenty-seven months; for late syphilis the cost would rise to a sum between $480 and $1,050 over a somewhat longer period. The same authority states that the cost of treating early syphilis at the Johns Hopkins Hospital is only $78 per patient, and Clark[2] reports that reasonably efficacious anti-syphilitic therapy may be given in the field under relatively primitive conditions for $8.60 for each syphilitic person per year. The latter figure presupposes an organized and intensive campaign against syphilis, and mass treatment of fairly large numbers of people; it does not include the cost of case finding.

3. Wages in the United States, 1931.—National Industrial Conference Board, Inc., New York, 1932.
4. Keidel, Albert—**Archives of Dermatology and Syphololgy**, Chicago, 1932, XXV, 470.

Much can be done by the individual physician from the standpoint of judicious choice and application of diagnostic and therapeutic methods in syphilis. In the paper already referred to, Keidel[4] mentions simplification of existing methods of treatment, choice of less expensive drugs, and realization by the physician that he must see the case of syphilis through to completion as factors which would contribute much towards bringing in and keeping under treatment large numbers of individuals infected with this disease. For patients who are on the economic border-line specimens of blood for serologic tests should be sent to health department laboratories and no special charge made for the test by the physician. Similarly, the cheapest efficacious anti-syphilitic drugs on the market should be administered; there is little reason for giving a poor patient an intramuscular or intravenous injection of mercury if he can be relied upon to carry out inunctions himself. Teachers and specialists should instruct medical students and physicians taking post-graduate training to use the simplest and least time-consuming methods of treatment so that the greatest number of patients may be effectively treated in the shortest time. Long continued treatment of patients with persistently positive serologic tests, of patients with latent syphilis, and of the aged accomplishes little from the standpoint of control and may actually eventuate in harm to the recipient of the therapy. Each patient in these classes should be considered an individual problem.

The provision of treatment for indigent and semi-indigent syphilitics in towns and rural communities is the most difficult problem in the control of this disease today. In the larger towns every effort should be made to establish and integrate a venereal disease clinic with the local health unit. The work of Clark, which has already been cited, shows the effectiveness of such clinics in reducing the prevalence rate. If the clinic is impossible of attainment a fairly good substitute is offered in the form of so-called cooperating clinicians. Several States with large rural populations have used this method to advantage. It consists in the appointment of competent practitioners by the State cooperating with local health authorities and the furnishing of drugs and supplies to these physicians for the treatment of those patients who cannot afford the regular fee. In return the cooperating clini-

cian treats all indigent and semi-indigent individuals, and is permitted to charge the latter a small fee if payment is possible. This arrangement gives the physician a certain prestige and brings other patients to him who are in a better position to pay. The plan is only successful so long as all parties display honesty of purpose and the physician is interested in the work and shows average tact and broad-mindedness. Indeed, as in any health program, the spirit of complete, mutual cooperation between local health authorities, physicians, and responsible citizens is the essential factor conducive to success.

## PERIPHERAL VASCULAR REACTIONS—SOME FACTS OF CLINICAL SIGNIFICANCE.*

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Brilliant as was the development of medicine and surgery based upon the first exact knowledge of anatomy and pathology, subsequent advances in physiology have rivaled these in importance, and now facts established by micro-anatomy and a study of the peripheral vascular apparatus threaten to transcend both. Since Harvey's classical description of the circulation of the blood, we have been content with a certain refinement and development of his concept of the circulation. This concept dealt chiefly with the heart, arteries and veins, while scant attention was given to the capillaries. It is apparent that the role of the arteriole, capillary and venule is just as important as that of the heart, artery and vein, yet the smaller components of the vascular system have been briefly dismissed by anatomists and physiologists and taken for granted by clinicians.

The capillaries being the final channel in the transport of blood to the tissues for mutual exchange of metabolites, we find that an understanding of their physiological processes will throw light on many a dark chapter of clinical medicine. They were discovered about two hundred years ago, but have received little attention until the past fifteen years. Within this time, an enormous amount of work has been done by a host of independent students and much valuable data has been accumulated. It is my purpose to discuss a few recently discovered facts of possible clinical significance.

*Ex-Intern's Oration presented at the ninth annual meeting of the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., October 4, 1932.

Interest in this subject was first stimulated by repeated contemplation of cases of heart failure, in which the heart is not primarily at fault. How often have we studied a case of essential hypertension, followed the record of gradually mounting blood pressure over a period of years, watched the slow but steady enlargement of the heart with subsequent development of murmurs and abnormalities of rhythm, and finally seen signs of a failing circulation, falling blood pressure and death? We then go to the necropsy and find in a case of "heart failure" that the heart is normal in all important respects save its huge size! The valves are all competent, the coronary arteries not seriously damaged, and the myocardium may be unchanged even microscopically except for hypertrophy. Rather is this not a case of failure in the peripheral vascular channels, for which the heart could not further compensate by hypertrophy? Indeed it has been suggested that a lack of adequate capillary blood flow within the heart itself is an important factor in its final failure.

The importance of the quantitative study of the number and arrangement of the capillaries in the different organs and tissue as well as the forces controlling their function has been emphasized by Krogh.[1] He has summarized entertainingly his own researches together with a discussion of the World's literature in his book. As he states the problem: "By what forces and by means of which mechanisms is the function of the capillaries . . . carried out, and how is this function regulated by the organism, adapted to its ever changing needs and coordinated with its multifarious activities?"

The number of open functioning capillaries per square millimeter has been counted in certain tissues and found to vary tremendously, dependent upon whether the organ is at rest or at work. Some idea of the enormous capillary surface available in skeletal muscle may be obtained from the following quotation from Krogh: "Supposing a man's muscle to weigh 50 kg. and his capillaries to number 2,000 per sq. mm., the total length of all these tubes put together must be something like 100,000 kilometers or 2½ times around the globe and their total surface 6,300 sq. meters." Anastomoses of fairly large arterioles directly with the veins have been described, particularly in the skin of exposed parts. Presumably, this is for the purpose of increasing the flow of

blood in the process of local and systemic regulation of temperature. In the heart anastomoses between the Thebesian veins and the coronary arteries have apparently made life possible for a patient with almost complete occlusion of the coronary vessels.[2]

Whether capillaries possess the power of independent contractility or are merely passively expanded by changes in arteriolar flow or variation in venous pressure[3] is an old problem. The discovering at various points along the capillary wall of spider-like Rouget cells is of interest in this connection. These cells, repeatedly demonstrated in the frogs tongue by supravital staining and by fixation with Zenker's solution in the mesentery, seems to be similar in all respects to smooth muscle cells. They have thus been thought to represent a thinning out of the muscular coat of the arterioles. This would seem to account for the fact that a capillary is frequently observed to exhibit a single sharply contract point along its course. The concensus of opinion is shifting to the view that capillaries do possess the power of contractility and that this is not necessarily dependent upon the pressure in the arterioles. Still the *modus operandi* remains obscure. Studies on the effect of local changes in oxygen saturation and $CO_2$ tension as well as variations and the Ph of the tissues have failed to offer an acceptable explanation. A satisfactory elucidation of this mechanism would not only be a great contribution to normal physiology but would help us to understand such pathological conditions as urticaria and angioneurotic edema.

Of the nerve supply to the capillaries much remains to be learned. Actual sympathetic innervation beyond the arterioles has not been proven. Yet a great deal of evidence points toward the presence of a vast peripheral fibrillar nerve net, probably composed of minute interlacing fibrils formed by a splitting up of the axones. As yet no adequate histological technique has been developed for the proper study of these fibers. However, there are certain vascular reflex phenomena strongly pointing to such an arrangement.

During the past decade these peripheral vascular reactions have been the object of minute and analytical study by Thomas Lewis[4] and his coworkers. Using ingenious methods, he has studied the reflex erythema and wheal formation following mechanical, thermal and chemical stimulation of the skin. Experimental animals, normal human subjects as well as patients with urticaria and Raynaud's disease have been used to accumulate a mass of valuable data. The exact mechanism of production of the reflex "flare" surrounding a point stimulated is uncertain. Lewis believes it to be due to the local formation of a chemical substance possibly from injured tissue cells. Because of the well-known action of histamine pricked into the skin, in producing a wheal surrounded by an area of erythema or flare, he has named this hypothetical chemical "H-substance." It is a debated point as to whether or not this flare is produced by participation of the sympathetic nerve net and is in the nature of a local axone reflex. In any case, there is much evidence to support the idea that an H-substance is formed. Both the appearance and duration of the flare are dependent upon the blood flow to the area. It passes off in such a way as to suggest the removal of a chemical substance by the blood, and its duration is prolonged by stopping the local inflow of blood. It is thought by Lewis to involve only the "strong" arterioles; others believe that arterioles, capillaries and venules take part in the reaction.[5] It is interesting to note that the vascular reactions of urticaria and inflammation are not essentially changed by depriving the area of its sympathetic nerve supply.

Cases of urticaria in which the attack is brought on by exposure to cold are not uncommon. A young lady who had walked several blocks to my office on a cold day, wearing thin hose, on arrival, exhibited numerous wheals over both legs. Local edema of one or more fingers was produced in this patient by plunging them into ice water. The local formation of an H-substance has been offered to explain such cases.

Another interesting feature of these studies is the observation that suitable stimulation of the sensory nerve roots will produce a vascular dilatation in the area supplied. This is supposed to be due to the passage of what are called antidromic impulses travelling peripherally in a sensory nerve. These impulses seem to cause the formation of the H-substance in the affected area. Herpes zoster is a probable clinical instance of such a phenomenon. This reaction occurs after section and degeneration of all known sympathetic innervation,

but does not occur after complete degeneration of all nerve supply with loss of sensation.

Of more practical importance are the long path axone vascular reflexes. Stimulation of the sympathetic to one limb may cause vascular dilatation of the opposite side as well. Thermal stimulation of a rabbit's ear will produce hyperemia of the opposite as well as the affected ear. The pallor of fear and emotional blushing are familiar examples in which this reflex must involve long and complicated pathways. Reflex hyperemia of a loop of intestine has been observed through a laparoscope to occur following the application of heat to the abdominal wall. When the exact mechanism of such phenomena are fully understood we shall probably be able to apply heat and cold in the treatment of disease with more understanding and efficiency. Perhaps physiotherapy may yet be lifted from the level of empiricism and mystery to occupy an important place in rational therapeutics.

Practical application of knowledge in this field has already been made in both surgical treatment and medical management of cases of Raynaud's disease and thrombo-angiitis obliterans. The series of phenomena following removal of sympathetic ganglia for Raynaud's disease might be discussed, did time permit. The increased vascularity seems to be caused by dilatation of the arterioles, the capillaries not being directly affected. In spite of the fact that there is a tendency for the arterioles to regain tone with a drop in the skin temperature to normal or slightly above, therapeutic results seem to justify the procedure. The older operation of stripping the arteries of their sympathetic fibers is not as satisfactory, probably because not enough of the total sympathetic innervation is removed. Acetylcholine has a similar effect in causing peripheral arteriolar dilatation and has been advantageously employed. Alcohol injection as well as resection of the lower cervical and upper thoracic sympathetic ganglia have abolished the pain in angina pectoris.

The problem increases in complexity, but we are never allowed to leave out of account the glands of internal secretion. The effect of adrenalin on vasomotor tone and arterial blood pressure is well known. It seems to exert its action on the arterioles through the medium of the sympathetic, by which it regulates the volume of blood flow to a part. It has been called the arteriolar hormone. Pituitrin seems to exert its action directly on the capillaries, thus regulating the conditions of exchange and preventing stasis and stagnation in the periphery. It has been called the capillary hormone and may have something to do with capillary permeability. Other observations suggest a possible unknown hormone regulating permeability. Both of these drugs are useful in certain cases of urticaria. I know of one patient who had widespread urticaria induced by erotic sensations. It was completely controlled by the administration of pituitrin after various other measures had failed.[6]

Surgical shock is another beautiful example of failure of the peripheral vascular circulation. It can come about in more than one way, but whether it be due to tissue poisons or bombardment of the nervous system with sensory stimuli as in long difficult surgical procedures, notably brain surgery, the result is the same. The capillaries are widely dilated, the blood flow in them is sluggish or static, there is a marked reduction in the effective blood volume, so that the patient may be said to have bled to death into his own capillaries. Eventually from impaired oxygenation of the cellular walls of the capillaries themselves premeability increases and blood plasma is lost by filtration.

This brings us to the further consideration of the laws governing the exchange of fluids through the capillary walls. The basic law stated by Starling in 1896 still holds. This states that the passage of fluid from the capillary to the tissue spaces is chiefly dependent upon two factors: *the capillary pressure and the colloid osmotic tension of the blood plasma*, the former tending to cause filtration through the wall to the tissues, the latter tending to draw water in the reverse direction. Our understanding of the formation and absorption of edema is based upon this concept. Strangely no practical application of the law was made until 1917 when Epstein proposed his high protein diet for the treatment of cases of nephrosis. Other factors, such as the permeability of the capillary wall, the volume of lymph flow, and the metabolic activity of the tissue cells also play a part. The edema of heart failure is thus due primarily to increased venous and hence capillary pressure, while in nephrosis the great loss of protein through the

kidneys leads to a lowering of the colloid osmotic tension of the blood, and edema ensues. Nutritional edema is similarly explained. The role of the various salts, while important, is not fundamental, as they are readily diffusible. They do affect capillary permeability.

It is rather startling at first to realize that the colloid osmotic tension of the blood keeps the lungs expanded. If it did not exceed the negative intrathoracic pressure, loss of fluid would occur into the pleural cavity with hydrothorax.

Thus we see that even a brief and rather sketchy account of this vast and complex subject not only convinces one of their deep significance in life processes but also emphasizes the profundity of our ignorance. We will never be able to comprehend inflammation, the organism's most typical reaction to injury, until many of the problems outlined above are solved. Heat regulation, that delicately adjusted mechanism common to all warm blooded animals, operates through the forces and mechanism above described. The great problem of allergy is intimately connected with the sympathetic nervous system and peripheral vascular circuit. The very skin tests used in studying allergic patients are based upon vascular reactions the nature of which is not well understood. We cannot understand even breathing, sleeping and digestion until some of the gaps in our knowledge are closed. No longer then may the capillaries be neglected or taken for granted by students of medicine. In fact, it seems safe to predict that the next great advance in medicine will be based upon further work in the field above described. If some of us are so stimulated, the purpose of the paper will have been served.


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384 *Peachtree Street.*

## MEDICINE AS SHE'S SPOKE.

NAT. T. DULANEY, M. D., Bristol, Tenn.

No other line of work, either business or profession, finds human nature presented in exactly the same way as it is seen in the profession of medicine.

Every patient who presents himself to the doctor is the most important patient this doctor has at this particular time—that's the patient's view—and interest is one thing that a doctor should show in every case presented to him.

You can label a disease, but the symptoms of a given case are always a little different, in every individual. You open the package, but you find no two alike, and therein lies the great secret of the joy of medicine. There is a saying that human nature is the same everywhere. It is not the same anywhere. There are certain things that belong to man that belong to all animals, and there are certain characteristics that belong to this individual that are his alone—that no man in all the ages has ever possessed—and yet there has never been a perfect man physically. A preacher, holding a revival, once shouted from the pulpit: "There never was a perfect man! Did anybody in this vast audience ever hear of a perfect person? If so, please stand up." A little old lady wrapped in a black shawl stood up. The preacher asked, "Do you mean to tell me that you have ever heard of a perfect person?", and the old lady replied, "Yes, sir, my husband's first wife."

A doctor's success depends on skill, and the greatest skill is that shown in the management of humanity, and that requires something that Osler called "Equanimitas."

A surgeon should have a steady hand, but more important is a clear mind and a kind heart. That doctor becomes the greatest success who deals with every case as if it were one of his own family. That was the fort of the family doctor, of glorious memory.

Dr. Osler, in his essay on "The Student Life," says that every patient you see is a lesson in much more than the malady from which he suffers.

A prominent judge once told me that on one occasion he was prosecuting a man, and the defense was insanity. It was some trivial affair, and, on cross-examination, he said to the man, "You say you have been sick for several years; what has been your trouble?" The man replied, "I don't know, exactly, but I think it is typhoid fever."

Some people who are not very sick seem to take great delight in talking their complaints. They feel a superiority in disease. Instead of

an inferiority complex, they have a superiority simplex.

A man consulted me about his wife, and when I asked him what he thought the trouble was, he said he didn't know, but that another doctor told him she had too much gall. I remembered that Caesar once said that all Gaul was divided into three parts. Her's probably had never been divided.

A short time ago, I visited an old lady who had been almost helpless for four years with arthritis. Joints were enlarged, tendons contracted, and hands and feet were like deformed claws. What suffering the human frame can sometimes endure! I asked her if she had much trouble sleeping. She replied, "If I have ever slept a wink during the last four years, I don't know anything about it." She had slept, of course, but pain caused her to forget. Pain is the great equalizer, and suffering makes the whole world akin. She said she couldn't get anything to lay on her stomach but cornbread; and when I asked her why that stayed, she said she guessed it was because it was so heavy.

Medical science has developed wonderfully during the last few years, but doctors have lagged a little behind. Medical education has added more years in college, but it has not developed the individual. That not only applies to medicine—it applies to general education as well. More men study collectively; fewer learn to study by themselves. Men know more now, because of greater opportunities, but mental development is less, because of the ease of acquiring knowledge. Doctors lost caste in an age of commercialism, but with the depression medicine has come into its own.

A tramp went into a doctor's office for treatment. The doctor looked at him a moment and said: "I will examine you thoroughly for ten dollars." The tramp answered, "All right, Doc, and if you find it, I want half of it."

The development of the specialists has helped the doctors, but the pendulum has swung too far. Someone defined a specialist as "one who knows more and more about less and less," and there are specialists over the country who don't know much more medicine than a "tooth dentist." Dr. Larrabee, of Louisville, used to say that he was "a specialist of the hide and all that was in it," and a wonderful man he was. He was among the last of the old-time medical teachers whose lectures were literary gems. But the specialists have had their day, and now the general physician is coming back to serve humanity with his old-time faithfulness in the light of a new day.

An old country doctor was once called upon to fill out his first death certificate. He got along all right till he got down to the place for the name of the undertaker, and the doctor just filled in "I undertook the case, but failed."

There used to be more jealousies among doctors than any other class of men, and, like most jealousies, there was no real reason for it. The herb doctor was jealous of the college graduate, and the allopath could not think of consulting with the homeopath, and the osteopath, well he was the limit.

A doctor of the old school, or rather no school at all, had an old lady patient who was chronically ill. The doctor had failed to call and see his patient for several days, and if there was anything this patient wanted it was close attention. It was about the time that osteopathy was just beginning, and the husband of this lady called in the osteopath. In a few days the family doctor inquired of the husband how his wife was getting along. The old man said, "Well, Doc, you didn't come back, and so we got one of these rubbin' doctors to visit the old lady, and he said he would be back today and 'masticate' her again."

But no real doctor has any room in his head for jealousy. A doctor should never worry when another doctor takes a patient away. The only patient a doctor should worry about is the one he has. The one that leaves him is the other doctor's worry.

Years ago when a consultation was suggested, the doctor in charge took it as a reflection on his ability, and he bucked accordingly. But today, a doctor's consultation is a friendly meeting of professional men for the relief of suffering and the study of disease.

A doctor once had a very sick patient, and thought best to tell him of his condition. So the doctor began by saying, "My friend, you are a very sick man, and there is some doubt about your recovery. If there is any wish you would like to express, I would be glad if you would let it be known." The patient replied, "Well, yes, Doc, there is. I do wish that I had got another doctor."

There was a time when the country doctor was both doctor and nurse. I have in mind a one-room cabin back in the deep woods. It was mid-winter, and past midnight, and the

doctor had traveled several miles on foot, along a path that wound among rocks and stumps and bushes. There was not much fire on the hearth, but it was a friendly greeting. An old man and an old woman had lived in the cabin for years. It was high among the hills, and for years they had looked toward the east. The mornings were beautiful. As the years wore on, they felt only the heat and burdens of the day, but more recently it seemed there had been some clearings made toward the west. The sunsets had gathered the tints of the rainbow, and there was a longer twilight. Well, the doctor sat by the old man's bedside for a long time, and when he came back to the fire the old lady inquired, "Well, Doc, what do you think of the old man?" And the doctor answered, without thinking of how it sounded, "Well, if he lives till morning, there will be some chance for him, and if he don't there won't." And the old lady 'lowed "Now that's what I thought, Doc."

# Correspondence

### Coordination of Medicine and Dentistry.

June 30, 1933.

To the Editor:

At a recent meeting of the Dental Educational Council of America the Council adopted the following minute relative to the final report of the Commission on Medical Education, and the secretary was instructed to send you a copy thereof, with the hope that you may publish it in the next issue of your journal.

The Dental Educational Council of America has given special attention to the comment on dentistry on pages 216-217 of the *Final Report of the Commission on Medical Education* (December, 1932). Included in the Commission's comment is the expressed opinion that "dentistry should be developed *under* medical education." No reasons for this intended subordination of dentistry are given excepting the general opinions that (a) "It would seem logical"; (b) "would be consistent with university principles which no longer recognize the artificial separation of fields of knowledge"; and (c) "would go far toward establishing a highly desirable and valuable correlation of the professional training of these two closely related fields of practice" (medicine and dentistry).

These suggestions for the subjugation of the dental profession are neither impressive nor persuasive. To the Dental Educational Council, cognizant of the related facts in the history of both medicine and dentistry, the proposed development of dentistry "*under*" medical education, in the United States, (a) would seem to be illogical; (b) would be inconsistent with university principles which clearly recognize the public necessity for the self determination of, and for appropriate differences in education for, the various professions; and, (c) instead of correlating the professional training in medicine and dentistry, would degrade one profession for the exaltation of the other, and also demoralize the service of the practitioners thus dishonored.

There should be intimate *coordination* between the *principles* and procedures of education for medical practice and for dental practice. Although remaining *independent*, these two forms of health-service education should be made more closely *interdependent* for the betterment of each. The *Council and the dental schools have long promoted this mutual helpfulness.* The strengthening of this constructive educational development, in the public interest, appeals to us as a far more important *interprofessional objective* than the relegation of one profession to a position of *enforced inferiority.* For the attainment of this worthier purpose, we pledge the cordial interest and effective cooperation of the faculties of the dental schools in the United States.

Albert L. Midgley,
*Secretary.*

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka St., Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Ave, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 S. Market St., Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Ave., Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Ave, Richmond.

### The Milwaukee Session.

The Eleventh Annual Convention of the Woman's Auxiliary to the American Medical Association met in Milwaukee, June 12th-16th. Mrs. James F. Percy presided and the convention was formally opened with an invocation offered by Rev. William M. Magee, S. J., President of Marquette University. Mrs. Fred Nause, Jr., of Wisconsin, made the address of welcome, to which Mrs. Southgate Leigh, of Norfolk, Virginia, responded most graciously. Very fittingly, the Convention paused in the first meeting to pay respect to the memory of its late President, Mrs. Walter Jackson Freeman. Mrs. Augustus H. Kech, of Pennsylvania, gave a most impressive "In Memoriam," the deep sentiments of which were fully appreciated by every person present, but more particularly by those who had had the pleasure of being associated with this tireless worker.

The meetings were enthusiastically attended, the total registration being more than 800.

Mrs. Percy's report showed excellent work despite the handicap of coming into her position during the middle of the year. The Standing Committee Chairmen reported progressive work along their several lines. The *Hygeia* work continues to move forward, the total subscription being 2,420, with Missouri leading in the number of subscriptions. The *Hygeia* Chairman stated "That *Hygeia* is to the Auxiliary what the Auxiliary is to the Medical Society."

Mrs Wayne Babcock, of Pennsylvania, gave a report on the Corinne Keen Freeman Memorial Fund which was established at the time of Mrs. Freeman's death. This is a contingent fund to be used at the discretion of the incoming president.

The Convention unanimously elected the following officers reported by the Nominating Committee:

President, Mrs. James Blake, Hopkins, Minn.; President-Elect, Mrs. Robert Tomlinson, Wilmington, Del.; first vice-president, Mrs. H J. Whitacre, Tacoma, Wash.; second vice-president, Mrs. R. K. Packard, Chicago, Ill.; third vice-president, Mrs. Chas. Oates, Ark.; fourth vice-president, Mrs. Van Ness, N. J.; treasurer, Mrs. James F. Percy, Los Angeles, Cal.; corresponding secretary, Mrs. Martin Nordland, Minneapolis, Minn.; recording secretary, Mrs. T. M. Burns, Denver, Col.

Chairmen of Standing Committees: Program, Mrs. A. B. McGlothlin, St. Joseph, Mo.; Finance, Mrs. Fred Adair, Chicago, Ill.; Legislation, Mrs. Phillip Doane, Pasadena, Cal.; Public Relations, Mrs. David P. Long, Harrisonville, Mo.; *Hygeia*, Mrs. Rogers Herbert, Nashville, Tenn.; Revisions, Mrs. J. A. McCaw, Denver, Col.; Press and Publicity, Mrs. Robert E. Fitzgerald, Wauwatosa, Wis.; Printing, Mrs. John Callin, Buffalo, Minn.; Archives, Mrs. W. B. Odenatt, Philadelphia, Penna.; Exhibits, Mrs. H. R. Minor, Fall City, Neb.; Historian, Mrs. W. Bartlett, St. Louis, Mo.; Parliamentarian, Mrs. W. J. Burns; Supplies, Mrs. J. N. Hunsberger, Norristown, Penna.

The gavel and the President's pin were presented to the new president, Mrs. James Blake, of Minnesota, by Mrs. Percy, the retiring president. All new officers were introduced by Mrs. Blake. In Mrs. Blake's address she stated that there would be no radical changes made this year; that our year's keynote would be "Service to the Doctors"; that we should back every authentic health project at the advice of the Advisory Board, and study the medical journal for material that is of interest to the profession.

Some of the recommendations for the National Pre-Convention meeting are:

That each state appoint an exhibit chairman.

That education chairmen be appointed in all states and that these chairmen study their duties in the Handbook.

That upon the payment of one dollar a year the News Letter be sent to all county presidents and education chairmen.

That the Study Envelope be published for the coming year to the extent of the budget.

That the treasurers be more careful in returning the slips to the national treasurer.

That the installment and use of filing cards be stressed in all Auxiliaries.

That the Auxiliaries inform themselves about the state and county boards of health.

That speakers bureaus be formed of lay men and women who may be called upon to speak before groups on health programs.

That essay contests be held in schools and given public recognition through the broadcast and the newspapers, and that physicians be the judges in these contests.

That each state have a scrapbook.

Mrs. Arthur H. Brumback, of Chicago, gave a report of work that was being done at the Auxiliary Booth at A Century of Progress in Chicago. A most cordial invitation was given by her to all members and friends of the convention to visit the booth while in Chicago. (It was the writer's privilege to accept this invitation later when she visited A Century of Progress.)

The Convention was voted a success by all, due to the untiring efforts and gracious hospitality on the part of the Wisconsin and Milwaukee Auxiliaries, in planning both the business sessions and the social functions for the Convention.

The 1934 Convention will meet in Cleveland, Ohio, and it is hoped that many Virginia ladies will have the opportunity of attending.

Annie Pearsall Simms,
(Mrs. Reuben F. Simms),
*Virginia Delegate.*

# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Abbott Laboratories
Sterile Ampoules of Procaine Hydrochloride Crystals (Abbott), 100 mg.
Sterile Ampoules of Procaine Hydrochloride Crystals (Abbott), 120 mg.
Sterile Ampoules of Procaine Hydrochloride Crystals (Abbott), 150 mg.
Sterile Ampoules of Procaine Hydrochloride Crystals (Abbott), 200 mg.
Lederle Laboratories, Inc.
Refined and Concentrated Antipneumococcic Serum, Type II (Lederle).
Eli Lilly & Co.
Extralin
Pulvules Extralin, 0.5 Gm.

### New and Non-official Remedies

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Calcium Gluconate—Merck.—A brand of calcium gluconate—N. N. R. (New and Non-official Remedies, 1933, p. 129). Merck & Co., Inc., Rahway, N. J.

Phenobarbital Sodium—Merck.—A brand of phenobarbital sodium—N. N. R. (New and Non-official Remedies, 1933, p. 96). Merck & Co., Inc., Rahway, N. J.

Capsules Lipiodol—Lafay, 0.5 Gm.—Each gelatin capsule contains lipiodol—Lafay. (New and Non-official Remedies, 1933, p. 232), equivalent to 0.2 Gm. of iodine. E. Fougera & Co., New York.

Tablets Lipiodol—Lafay.—Each tablet contains a calcium salt of the iodized fatty acids of lipiodol—Lafay (New and Non-official Remedies, 1933, p. 232), 0.1 Gm. (equivalent to 0.04 Gm. of iodine), incorporated in a base composed of sugar, acacia and cacao, and flavored with vanillin. E. Fougera & Co., New York.

Sodium Morrhuate—The sodium salt of the unsaturated fatty acids occurring in cod liver oil. The action of sodium morrhuate is that of a sclerosing agent. It is employed in solution with addition of a local anesthetic for the obliteration of varicose veins. It is marketed in the form of Ampoules Sodium Morrhuate 5%, with Benzyl Alcohol 5 c.c. G. D. Searle & Co., Chicago.

Ampule Glucose (U. S. P. Dextrose) Solution 20 c.c. size.—A solution prepared by dissolving anhydrous dextrose (New and Non-official Remedies, 1933, p. 267), in the proportion of 9 Gm. (equivalent to 10 Gm. dextrose—U. S. P.) to 20 c.c. of sterile distilled water. Lederle Laboratories, Inc., Pearl River, N. Y.

Ampule Glucose (U. S. P. Dextrose) Solution 50 c.c. Size.—A solution prepared by dissolving anhydrous dextrose (New and Non-official Remedies, 1933, p. 267), in the proportion of 22.5 Gm (equivalent to 25 Gm. dextrose—U. S. P.), to 50 c.c. of sterile distilled water. Lederle Laboratories, Inc., Pearl River, N. Y.

Ampule Glucose (U. S. P. Oextrose) Solution 100 c.c. Size.—A solution prepared by dissolving anhydrous dextrose in the proportion of 45 Gm. (equivalent to 50 Gm. dextrose—U. S. P., to 100 c.c. of sterile distilled water Lederle Laboratories, Inc., Pearl River, N. Y. (Jour. A. M. A., June 3, 1933, p. 1766.)

### Propaganda for Reform

Diathermy.—The Council on Physical Therapy in a preliminary statement reports that diathermy is the therapeutic use of a high-frequency electric current to generate heat within some part of the body. For want of better terminology, diathermy may be divided into two divisions: medical diathermy and surgical diathermy. Medical diathermy is contraindicated (1) in acute inflammatory processes such as acute non-draining cellulitis, acute arthritis characterized by infection, and acute pelvic infection; (2) in any condition in which there is a tendency to hemorrhage, such as a gastric ulcer, and (3) in those areas in which the appreciation of heat has been impaired or lost, as in certain peripheral nerve injuries. It is also contraindicated in diseases or injuries in which simpler methods of applying external heat give satisfactory results. The advantages of electro-surgery lie in effective destruction in loco of tissues that it is desirable to eliminate. This manifestly includes many forms of malignancy. (Jour. A. M. A., June 17, 1933, p. 1933.)

# Book Announcements

**Cancer Cures and Treatments.** Prepared and issued by the BUREAU of INVESTIGATION of the Journal of the American Medical Association, 535 North Dearborn Street, Chicago. Paper. 34 pages. Price, 15 cents.

**Medical Relations Under Workmen's Compensation.** A Report Prepared by the Bureau of Medical Economics, American Medical Association. American Medical Association, 535 North Dearborn Street, Chicago. Pamphlet of 157 pages. Price, 75 cents.

**Transactions of the College of Physicians of Philadelphia.** Third Series. Volume the Fifty-Fourth. Philadelphia. Printed for the College. 1932. Octavo of 368-xcii pages. Cloth.

## "Shoes Have Tongues"—

"And the tales they tell to those who can hear would make the most intrepid gossipers pale," states Mae Kelly in the July issue of *Hygeia*. The problem of ill-fitting shoes is usually considered merely a woman's problem, but according to government bulletins, out of 58,706 men examined, 41,852 were found to be wearing short shoes.

It is stated that though fashion's caprices have not given much consideration to comfort, we have today improved somewhat, for during the twelfth century, the points of shoes became so long that people could not kneel in church to say their prayers and the points had to be chained to the knee so that the wearer could walk. All this occurred because a Norman aristocrat tried to conceal his deformed feet.

# Virginia Medical Monthly

Founded by Landon B. Edwards, M. D., April, 1874
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# Editorial

## Resolutions of American Medical Association.

The following important action was taken by the House of Delegates of the American Medical Association at its last meeting:

### Resolutions on Psychiatric Service in the Administration of Criminal Justice

Dr. T. B. Throckmorton, Section on Nervous and Mental Diseases, presented the following resolutions, which were adopted on motion of Dr. Throckmorton, seconded by Dr. Felix J. Underwood, Mississippi, and carried:

Whereas, A knowledge of prevailing methods of providing psychiatric service for courts and other agencies having to do with crime and criminals is essential to the establishment of an adequate psychiatric service on an efficient basis:

*Resolved*, That the American Medical Association recognizes the desirability of a survey of prevailing methods by which psychiatric service is now provided for courts and other agencies dealing with crime and of the results of such methods; and further

*Resolved*, That the Association urges its constituent and component societies to devote at least one meeting annually, to which members of the local bar associations shall be invited, for the joint discussion of psychiatric service in the administration of criminal justice and the treatment of the offender.

### Resolution on Prevention of Blindness by Examination of Pregnant Women

Dr. Edward Stieren, Section on Ophthalmology, presented the following resolution:

Whereas, Prenatal syphilis is responsible for interstitial keratitis and for many uveal and neural changes resulting in defective sight and blindness as well as deafness and other defects, and

Whereas, It has been found that above 3 per cent of the women attending prenatal clinics—in certain studies as high as 30 per cent—have shown a positive reaction to the Wassermann test, and it has been estimated on the basis of group studies that from 3 to 5 per cent of children taken in the mass have prenatal syphil's and that about half of these children without adequate treatment develop interstitial keratitis leading to defective vision if not blindness, and

Whereas, It has been authoritatively stated that prenatal syphilis can, without doubt, be prevented in the majority of cases, but only if there is complete cooperation between the patient and the various medical, social and educational agencies which enter into the diagnosis, the treatment and the care of the infected pregnant woman, and if treated adequately in the child before organic changes have occurred, it is curable without loss of sight, and

Whereas, This deplorable condition can be controlled only by combined efforts of the medical, the social and public health authorities; therefore be it

*Resolved*, That the Section on Ophthalmology requests the House of Delegates of the American Medical Association to appoint a committee to take this subject under advisement and to arrange methods by which cooperation may be secured through the combined efforts of the American Medical Association, the National Society for the Prevention of Blindness, the American Social Hygiene Association, the obstetric and ophthalmologic societies, the American Dermatological Association, public health organizations and such other organizations as can help, in order that blood examinations may be made of all pregnant women so that methods may be arranged for the treatment of all those infected with syphilis, thereby preventing the blindness and other tragedies which would otherwise inevitably follow.

Dr. Stieren moved that the resolution be adopted. The motion was seconded by Drs. Emily D. Barringer, New York, and G. Henry Mundt, Illinois, and carried, after Dr. Frank W Cregor, Section on Dermatology and Syphilology, had stated that a similar, identical resolution was unanimously adopted by that section.

## Excerpts from Dr. Lewis' Address.

The address of the president-elect, Dean Lewis, before the House of Delegates of the American Medical Association, at the Milwaukee meeting, just closed, deals with impor-

tant practical matters in medical practice. Readers may find herein expressed opinions that have been well considered by one of unquestioned experience in large medical problems. Opinions and reflections on economic and practical problems of the day, emanating from a chosen leader of organized medicine, carry undoubted weight. As president-elect, Dr. Dean Lewis has enjoyed a year of closest contact with these problems and at the same time occupied a position of detachment from office. In circumstances so favorable for well-matured consideration, the address of the new president of the American Medical Association merits the careful perusal of state and county societies as endeavors are undertaken to solve pressing problems of the day in medical practice.

The following excerpts are taken from Dr. Lewis' address:

Physicians have suffered acutely during the depression and have rendered their services freely without complaint. Apparently during periods of depression the morbidity and mortality are less than during periods of prosperity and inflation. I am told that insurance companies have known this for years and their statistics verify the foregoing statement. We are now apparently suffering the economic consequences of peace.

One of the main problems which had a decided effect on the profession was the extensive hospitalization program which the government embarked on immediately following the war. The legislation that was passed is of such recent date that it is not necessary to review it. Non-service-connected disabilities entered largely into the program, so that finally almost 70 per cent of the cases that were hospitalized presented disabilities which had nothing to do with the service and did not even have a presumptive connection. Ochronosis, acidosis, gout and obesity were even on the list of disease and were applied in the rating of disabilities. In the economy program that has been attempted, non-service-connected disabilities were excluded. Recent happenings indicate that much pressure has been brought to bear and that hospitalization of non-service-connected disabilities may again be attempted. If the bars are let down there will gradually be an increase in the amount of hospitalization and a return to the conditions which existed before the attempt to economize was made.

There is no argument as to the responsibility of the government in the care of the service-connected disability, nor as to the responsibility of the government to the widows and orphans of those who were sacrificed in battle. But any man discharged from the army who is able to make his living has no lien on the government. This is generally admitted. It is much more difficult to rescind legislation than it is to prevent its passage. The medical profession must still make untiring and unceasing effort to prevent the hospitalization of non-service-connected disabilities. If such continues, the foundation of medicine and the future of medicine are threatened. Hospitals already built for the care of the civilians in different parts of the country cannot carry the financial load long. I realize that not infrequently the medical profession has a bad press and that they are regarded as selfish. Any suggestions which they may make are suspected of being based on some ulterior motive. The history and traditions of the profession refute such statements. Continued effort should be maintained to prevent a return to the system which prevailed before the economy act was considered. Personal contact with legislators is about the only method we have to prevent the continuation of a scheme which will bankrupt a government, and, if bankrupt, even the non-service-connected disability will have nothing. We will all be in the same boat, which is disabled and tossed about.

The different reports which have been made from time to time relating to medical care have been discussed so frequently that it is doubtful whether anything should be said about them. We all know that there are defects in medical practice. There are no systems of practice that are without fault. We have heard too much about the costs and about the distributions of the cost and not enough about the quality. Some of the criticism has come from those engaged in business who have promoted instalment buying and have encouraged people to assume obligations which are so great that those dispensing the necessities of life have had payments long deferred, and, at times, no payment has been made at all.

The losses which hospitals have suffered led them to accept different schemes, which they will be glad to cast off when the depression is over. You will hear that it has been found after a careful survey that there are more than thirty schemes which have been proposed to provide for the periodic prepayment purchase of hospital care. Some of these schemes are revolutionary in character. They are proposed and backed by propagandists and promoters who are looking for a profit. Beware of the promoters who are robed in the pure white of charity. No consideration is given to the relation between patient and physician. They have not confined their effort to the low income groups, and no attempt has been made to exclude from their scheme the final inclusive medical service with hospital care. In fact, in some of these schemes it is frankly stated that such is the ultimate aim.

It has been stated and no denial has been made that under any of the schemes which have been proposed to bring forth a medical Utopia suddenly that the mortality has not been decreased and the length of sojourn in the hospital has been doubled. The length of stay in the hospital is in marked contrast to the present system, in which an attempt is made to return the patient to life as soon as possible, with as little disability as is compatible with his sickness or injury. Hospitalization for minor illnesses has increased and malingering has become a part of the system. It is natural for a man to get some return for his money, and he will seek under such a system hospitalization to secure some return from money invested.

It has been the history of all these movements that voluntary insurance is unsuccessful, and the compulsory insurance is finally adopted.

One of the founders of a foundation which gave financial support to Committee on the Costs of Medical Care has recently made the statement that voluntary insurance is not successful and that compulsory insurance should be put in effect as soon as possible and that this type of insurance should be placed for consideration before the federal authorities.

Judging by the performance of the business world during the past two years, I should say that the medical profession has shown more ability to take care of its own business than any other profession.

Physicians make mistakes, but their practice has been on a high plane and will continue on this plane if cooperation is practiced instead of competition, and if bidding for practice does not replace the system which has been in vogue since the beginning of practice.

Questionable practices regarding fees must be settled by the profession, not by legislation but by developing a profession which places service above financial gain, and give to each patient a square deal. Some will say that such a statement is superidealistic, perhaps pure piffle; but during the past few years we have seen a distinct improvement in the tone of medical practice, and I believe that this will continue. There will probably always be some sharp practice. There will be some sharp practice in all professions. When it ceases we shall be translated and all the schemes suggested at the present time will pass away. The only one left to inhabit the earth at that time will be the paid secretary, promoter or propagandist, and they will be so lonesome that they will pray to be speedily destroyed.

The medical profession should take an active interest in hospitalization. Hospital planning should be undertaken. A city or town of 15,000 people should not have three hospitals. One good hospital could take care of the needs of such a community. Better have one hospital that is full and active than three partially filled. The partially filled hospital has an enormous overhead. Always expecting to be filled, it keeps a large civilian staff always expecting that it will suddenly be called on to work overtime.

Hospital construction has run riot. Many hospitals are built as memorials, and some are built to tickle the vanity of hospital architects. This point has been emphasized so much that I need say nothing. One of the many increases in the cost of medical care has been hospitalization.

In some ways the depression has rendered a great service, as it has been demonstrated that many of the mechanical aids to practice are not necessary and that the cost of medical service may be greatly reduced and the quality maintained Sir James Mackenzie stated the case well when he said "It would be ridiculous to put a man with a cut finger through such a process [a thorough examination] and expect him to pay for it, as it would be to expect an automobile owner to have the entire machine overhauled each time he has a puncture." Simplification of medical practice should be the aim of this organization. Such a simplification will mean a limitation of specialism and the reduction of specialists. A motion providing for the recognition and listing of specialists was passed last February before the Council on Medical Education and Hospitals.

When medical education was passing through such revolutionary changes a few years ago, state licensing boards formulated some stringent and restrictive rules which many of the poor schools could not meet and they were forced to close. With the improvements that have occurred in medical education, many of the requirements might be rescinded. Schools that are recognized as giving good courses should arrange their own schedules, determine the type of internship which they think best and the number of hours which should be devoted to a subject. Their aim and desire is to graduate the highest type of student, who should be admitted to practice when graduating from such a school without examinations before state boards.

There are certain imponderables which determine one's ability to practice and these are not based on studies, schemes, curriculums or time schedules.

## Economics and Public Relations.

As questions dealing with problems of economics, legislation and public relations in medical practice will doubtless come up for consideration by the membership at the coming annual session of the Medical Society of Virginia, this Fall, it would be advantageous to place before our readers the official action of the National Society. Local and state conditions may modify the decisions, but it would seem that a free and wide study of the questions involved would tend to bring a clearer understanding and a better solution of difficulties.

### Report of Reference Committee on Medical Economics

Dr. Arthur J. Bedell, Chairman, presented the following report:

*Mr. Speaker and Members of the House of Delegates:*

Your committee has carefully reviewed the report as published in the Handbook and concurs with the Bureau that "the problems that presented themselves were not all the result of current social and economic conditions but were, in some instances, the culmination of long standing and gradually developing practices. The schemes which were promulgated in the guise of cures for certain alleged faults in the administration of medical service represent a rapid extension of commercialism into the provision of medical services."

Your committee appreciates the special consideration that has been given to contract practice and agrees that this type of medical work is constantly changing. It recommends that the study of contract practice be continued, and the action of county societies in dealing with these problems be based on the recommendations of the Judicial Council:

By the term "contract practice," as applied to medicine, is meant the carrying out of an agreement between a physician or a group of physicians as principals or agents and a corporation, organization or individual, to furnish partial or full medical services to a group or class of individuals for a definite sum or for a fixed rate per capita.

Contract practice per se is not unethical. However, certain features or conditions if present make a contract unethical, among which are: (1) When there is a solicitation of patients, directly or indirectly. (2) When there is underbidding to secure contracts. (3) When the compensation is inadequate to assure good medical service. (4) When there is interference with reasonable competition in a community. (5) When free choice of a physician is prevented. (6) When the conditions of his employment make it impossible to render adequate service to his patients. (7) When the contract because of any of its provisions or practical results is contrary to sound public policy.

Each contract should be considered on its own merits and in the light of surrounding conditions. Judgment should not be obscured by immediate, temporary or local results. The decision as to its ethical or unethical nature must be based on the ultimate effect, for good or ill, on the people as a whole.

Group hospitalization has been described and criticized in several issues of *The Journal*. Certain phases of some plans may have merit. The committee be-

lieves many contain features which are subversive to the best interest of the public, the medical profession and the hospital, and it condemns any plan which incorporates principles contrary to the remarks on contract practice. The committee recommends that the investigation of group hospitalization be continued and that the results of the studies be published in the Medical Economics department of *The Journal*.

The provisions of most workmen's compensation laws have been a constant source of irritation and annoyance to employees, employers and the medical profession. The committee approves of the report, prepared by the Bureau on Medical Relations under Workmen's Compensation and recommends that it form the basis of state conferences.

The committee looks with favor on the medical economics course in medical colleges but urges that only competent instructors be employed. It recommends that the outline on medical economics be completed by the Bureau and submitted to all medical schools who desire it.

Group practice has received widespread attention. The articles in *The Journal* have been comprehensive in scope and the facts presented well correlated and so authentic that they should form the basis for any consideration of the problem and be read by all members of the Association. Those forming a group should be guided by the same principles regarding professional qualifications for practice, ethical relations to fellow practitioners and consideration for the economic position of those whom they serve as should guide the individual practitioner.

The committee notes the conferences on health and accident insurance practice and recommends the approval of the proposed short form health and accident claim proof blanks. It senses in this newly developed relation between our Association and this service group opportunities for improvement in our mutual contacts

The committee commends the Bureau's activities, the field investigations of the director and his assistant, the number of special engagements that have been filled and particularly the published analyses. All of these efforts have been excellent and command attention and the committee recommends that they be continued.

It is with a feeling of pride and a growing sense of security based on the information gathered and disseminated by this Bureau that the committee recommends the report as a whole to the House of Delegates and expresses its approval of the work done by the director and his assistant.

ARTHUR J. BEDELL, *Chairman*.
WALTER F. DONALDSON,
C. W. WAGGONER,
JABEZ N. JACKSON.

The various sections of the report were adopted on motions of Dr. Bedell, duly seconded and carried, after discussion by Dr. Holman Taylor, Texas, and by the Secretary, after which the report of the committee was adopted as a whole.

### Report of Reference Committee on Legislation and Public Relations

Dr. C. E. Mongan, Chairman, presented the following report:

1. With reference to the resolution introduced by Dr Henry C. Macatee, delegate from the Medical Society of the District of Columbia, your committee recommends that the House of Delegates commend the action of the Medical Society of the District of Columbia in informing its members of the medical and social implications of the Minority Report of the Committee on the Costs of Medical Care, in order to enable them better to support the principles and recommendations of that report. Your committee recommends that the House of Delegates commend this plan to the favorable consideration of other constituent associations.

Your committee believes that the organization of groups around hospitals or otherwise, supported by a voluntary or compulsory insurance or taxation, as recommended by the Majority Report of the Committee on Costs of Medical Care, would be inimical to the best interests of all concerned. It believes that such a plan, if compulsory, would encourage malingering, would create a vast political machine with all its evils, would inevitably lead to state medicine, and would reduce our profession to the status of government employees with the present relation of physician and patient a thing of the past. Your committee believes the Minority Report and its recommendations offer the best solution of the existing situation and the only hope for a future stabilized medical practice. It recommends that the House of Delegates adopt the resolution proposed by Dr. Macatee, namely:

*Resolved*, That the House of Delegates of the American Medical Association endorse the Minority Report of the Committee on the Costs of Medical Care as expressive, in principle, of the collective opinion of the medical profession

2. Your committee recommends that the House of Delegates approve the principle suggested in the resolution offered by Admiral C. E. Riggs, U. S Navy, namely, that veterans suffering from service-connected disabilities be treated in the hospitals of the Army, Navy and Public Health Service, instead of in the hospitals of the Veterans' Administration, whenever it is to the best interests of the disabled veteran that he be so treated. Your committee recommends further that the Auxiliary Committee on Veterans' Affairs be authorized to do, under the direction of the Board of Trustees, whatever may be possible to carry this principle into effect, so far as is consistent with effective and economical government administration.

3. Your committee commends the work of the Committee on Legislative Activities and of its Auxiliary Committee on Veterans' Affairs. It recommends that the committee and its auxiliary committee use every effort to discover, through our constituent state associations and otherwise, the extent , if any, to which veterans who are denied medical and hospital care under the order recently issued by the President, are in need of such care but unable to obtain it through local medical and hospital services in the communities in which they reside.

Your committee recommends that the House of Delegates adopt a resolution endorsing the policy of the President to reduce the cost of medical and surgical care of veterans to rational proportions, equitable both to the veteran and to the taxpayer, and pledging the Association to support that policy.

Your committee recommends that the attention of our several state associations be called to the recommendation of the Committee on Legislative Activities, urging action to prevent the practice of medicine by corporations. The illegality of the practice of medicine by corporations has been established by the decisions of a number of state supreme courts.

Your committee wishes to bring to the notice of the House of Delegates the comment by the Committee of Legislative Activities, namely, "We call attention to the excellent work that is being done by the Bureau of Legal Medicine and Legislation.

Exact information is always available through this Bureau on legal aspects of the practice of medicine, and on legislative activities, both state and national. A brief résumé of the activities of this Bureau was published in the April number of the *American Medical Association Bulletin*."

Your committee heartily approves this comment.

4. Your committee offers the following resolutions for adoption:

*Resolved*, That the American Medical Association commends the efforts of the President to preserve to all veterans suffering from service-connected disabilities all medical and hospital benefits necessary to their relief; and

*Resolved*, That the Association commends, too, the action of the President looking toward a reduction in medical and hospital benefits for veterans who are without service-connected disabilities, so that the cost of the benefits provided, if any, will be reasonable, and equitable to the taxpayer as well as to the veteran; and further

*Resolved*, That copies of these resolutions be sent immediately to the President, the Vice-President, the Speaker of the House of Representatives, the Director of the Budget and the Director of the Veterans' Administration.

5. Your committee concurs in the recommendation of the Board of Trustees contained in the report of the Bureau of Legal Medicine and Legislation that proper narcotic legislation by each of the several states be urged. Your committee recommends that the Association approve the draft of the proposed uniform state act concerning the control of narcotic drugs, prepared by the National Conference of Commissioners on Uniform State Laws and approved by the American Bar Association. This draft had its origin in the work of a committee of the American Medical Association, and in its preparation the Bureau of Legal Medicine and Legislation had an active part.

Your committee concurs in the recommendation that the House of Delegates approve the draft of a proposed uniform medical lien law, prepared by the Bureau of Legal Medicine and Legislation and submitted to the several state associations as a guide in the preparation of similar legislation.

CHARLES E MONGAN, *Chairman*,
CHARLES J. WHALEN,
WELLS TEACHNOR, SR.,
E. M. PALLETTE,
A. R. ROSS, *Secretary*.

On motions of Dr. Mongan, duly seconded and carried, the first three sections of the report were adopted.

Dr. Mongan moved that the resolutions contained in section 4 of the report be adopted. The motion was seconded by Dr Charles H. Goodrich. New York, and carried, after the Secretary had been instructed to convey this message in the form of a telegram to the President.

Section 5 of the report was adopted on motion of Dr Mongan, duly seconded and carried.

Dr. Mongan moved the adoption of the report as a whole. The motion was seconded by Dr. Mather Pfeiffenberger, Illinois, and carried.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

### Opening of Dr. Lapham's Sixth Circuit.

The sixth circuit of post-graduate classes in prenatal and postnatal care conducted by the Joint Committee under the instruction of its Field Clinician, Dr. M. E. Lapham, of Philadelphia, opened in Southwestern Virginia in the week of July 10th. The classes were organized in March with a favorable advance enrollment, but the activity and interest of especially capable local committees brought the total enrollment at the time of opening to fifty-one physicians. Forty-one of them attended the meetings of the first week, and in addition seventeen visitors, most of them public health nurses, were present. For 80 per cent of those enrolled to attend the first meetings of classes that were organized four months ago is a new and commendable record. The very fact augurs for a successful series of meetings in the new sixth circuit.

Below is a tabulation of data concerning enrollments and attendance after the first meeting of these classes.

TAZEWELL on Mondays, at 2:30 P. M. in the Court House. Enrolled: Drs. M. J. Alexander, J. N. Higginbotham, P. D. Johnston, W. I. Painter, A. D. Parson, Isaac Peirce, O. K. Phlegar, Frank Pyott, J. P. Williams, J. W. Witten. Visitors: Drs. R. H. Paden, C. E. Stump, W. H. St. Clair, E. M. Tanner, H. G. Steele. Total attendance at first meeting: 12.

LEBANON on Tuesdays, at 2:00 P. M. in the Red Cross rooms. Enrolled: Drs. P. J. Bundy, S. C. Couch, W. C. Elliott, R. F. Gillespie, C. B. Greear and Dr. Matthews. Visitor: Dr. T. G. Smith. Total attendance at first meeting: 6.

BRISTOL on Wednesdays, at 7:15 in the King's Mountain Memorial Hospital. Enrolled: Drs. T. R. Bowers, Aaron Cole, A. J. Edwards, C. W. Friberg, C. W. Fleenor, William Gammon, E. H. Hearst, R D. Hollowell, M. G. Rock, E. D Rollins, L B. Snapp, P. D. Stout, W. H. Teeter, D. D. Vance and W. K. Vance, Jr. Visitors: Dr. H. W. Bachman, and Dr. Moore, and four nurses. Total attendance at first meeting: 17.

ABINGDON on Thursdays, at 8:00 P. M. in

the Council Chamber at the Mayor's Office. Enrolled: Drs. C. M. Clendenen, L. F. Cosby, Boyd E. P. Dickerson, E. E. Epperson, H. M. Hayter, R. L. Hillman, L. M. Hines, D L. Kinsolving, H. W. Smeltzer, J. A. Soyars, J. J. Sproles, S. H. Yokeley. Visitors: Two nurses. Total attendance at first meeting: 12.

Marion on Fridays, at 1:30 P. M. in the office of Dr. Z. V. Sherrill. Enrolled: Drs. C. H. Baker, D. C. Boatwright, R. D. Campbell, A. B. Graybeal, E. A. Holmes, W. O. Neal, C. A. C. Sherrill, Z. V. Sherrill. Visitors: Drs. Floyd Hart, M. V. P. King, and Stewart Staley. Total attendance at first meeting: 11.

**Successful Close of the Fifth Circuit.**

In a territory with a smaller professional population than any Dr. Lapham has yet visited, and in spite of the handicap of a course which had to be transferred from one center to another, the fifth circuit of classes in Southwestern Virginia achieved a new record of success, according to the two measures of attendance and comment by the members of the classes. In previous circuits the attendance rate on the part of each enrolled member has been 75 per cent; that is to say three-fourths of all the members attended every meeting, or, on the average, each member attended three-fourths of the meetings. But in Fremont, Norton, Stonega, Kingsport and Pennington Gap the percentage of attendance jumped to 83 per cent, so that six out of seven of the enrolled members were present for each meeting. The Stonega class made the highest mark yet recorded of 93 per cent.

The questionnaires distributed to each member of the class in an attempt to elicit their suggestions for the development of this program of post-graduate instruction brought the following results: The lectures were considered excellent by thirteen and good by seven; the clinics were rated excellent by two, good by five, fair by four, passable by one, and poor by two. Every physician replying, twenty in all, said the course was worth the cost in time and money, and nineteen, with one not voting, indicated their interest in similar courses in other subjects.

The enrollment and attendance figures for the fifth circuit follow:

| | *Enrolled* | | *Visitors* | | *Attendance* | |
|---|---|---|---|---|---|---|
| | *No.* | *Present* | *No.* | *Present* | *Average* | *Per Cent* |
| Fremont | 6 | 52 | 3 | 8 | 6.0 | 86.7 |
| Norton | 8 | 64 | 5 | 10 | 7.4 | 80.0 |
| Stonega | 10 | 93 | 2 | 2 | 9.5 | 93.0 |
| Kingsport* | 8 | 44 | 6 | 10 | 7.7 | 78.6 |
| Pennington Gap | 10 | 78 | 1 | 1 | 7.9 | 78.0 |
| | 42 | 331 | 17 | 31 | 38.5 | 83.3 |

*Seven meetings. One enrolled member who did not attend was disregarded in the tabulation.

**Seventh Circuit in Danville and Vicinity.**

The tentative assignment for the seventh circuit of Dr. Lapham's classes beginning in September has been made to Danville and the adjoining counties of Henry, Halifax and Mecklenburg. The courses in this section have been deferred for several months until it is now possible to offer them at the most favorable time of the year. Preliminary steps toward organization have been taken and it is anticipated that with the strong interest in the work already aroused the seventh circuit will achieve the same high level of productive results as the previous ones.

**Post-Graduate Medical Instruction Explained Before the State Conference on Adult Education.**

Dr. J. Allison Hodges, "father" of the effort on the part of the organized profession in Virginia to make the facilities of continued instruction available to all its members, followed up his appearance before the Maternity Center Association in New York with a paper explaining the work and accomplishments of the Medical Society of Virginia presented to the Fourth State Conference on Adult Education. The unique and altruistic concentration of a voluntary and professional organization upon educational objectives for the improvement of its members, as it was explained by Dr. Hodges, aroused profound interest on the part of those participating in the Conference. Other educational efforts in other fields are being energetically advanced in Virginia, by other voluntary associations, but perhaps none equals the adaptability and effectiveness of the program of post-graduate medical education.

George W. Eutsler, *Secretary*
*Joint Committee.*

# News Notes

## Arrangements Progressing for Annual Meeting.

The Publicity Chairman for the annual meeting of the Medical Society of Virginia writes that the Lynchburg Academy of Medicine, Inc., is looking forward with a great deal of pleasure to having the State Society meet in their city, October 24th-26th.

Headquarters will be at the Virginian Hotel and there will be housed both scientific and commercial exhibits. In addition to the Virginian, the Carroll Hotel is a block away and several smaller hotels close by the Virginian offer moderate rates.

The following rates are given by the hotels:

VIRGINIAN HOTEL

Single room with bath---------$2.50, $3.00 and $3.50
Double room with bath---------$4.00, $5.00 and $6.00
Single room without bath------$1 75

CARROLL HOTEL

Single room without bath ----------$1.50 and $1.75
Single room with bath ----------$2.00 and $2.50
Double room with bath and two double beds—4 persons---------$1.50 per person
Double room without bath ---------$2.50 and $3.00

The Virginian Hotel runs a coffee shop in addition to its dining room and the Carroll has a cafeteria.

Reservations should be made promptly. Dr. J. R. Gorman, Allied Arts Building, chairman of Hotels, will assist members in securing accommodations if necessary.

The local doctors are arranging a golf tournament for members and are making special plans for the entertainment of the ladies accompanying members. Be sure to make your plans to attend.

In addition to the symposium and volunteer papers to be presented by members, the President, Dr. J. C. Flippin, has as his guests Dr. Dean Lewis and Dr. Louis Hamman, both of Baltimore. These doctors are so well known to Virginians that the mention of their names should be sufficient to attract a large attendance. Why not be "among those present"?

## News Notes from Medical College of Virginia.

The number of patients to the outpatient department of the college for the month of June totalled 5,217. The total number of patients handled for the fiscal year ending June 30, 1933, was 63,635, which is 8,496 more than were handled for the preceding year.

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A silver lancet case once owned by Dr. Bartholomew Egan has been presented to the medical museum of the college. Dr. Egan was the first physician to receive an honorary degree from the Medical College of Virginia: this was conferred in 1841. His granddaughter Miss Lavinia Egan, of Gibsland, Lonisiana, was the donor of the case.

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The third portrait for the Founders' Room will be received sometime this month. This is a portrait of Dr. John Cullen, first professor of medicine, and one of the founders of the college. The portrait is being presented by Dr. Cullen's descendants.

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Dr. W. T. Sanger, president, spoke at the annual meeting of Virginia Pharmaceutical Association at Virginia Beach, June 26th.

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Among faculty members attending the recent American Medical Association convention in Milwaukee were Dr. H. B. Haag, Dr. Fred J. Wampler, and Dr. Ambrose McGee. Dr. McGee had an exhibit at the meeting on the comparative value of the Schilling blood count, sedimentation time, and lymphocyte-monocyte ratio tests in tuberculosis of childhood.

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Recent alumni visitors to the college have been Dr. J. B. Fisher, '92, Dr. C. W. Evatt, '24, Dr. B. D. Bosworth, '32, Dr. Marsh McCall, '30, Dr. L. B. Copenhaver, '31.

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Dr. J. L. McElroy, superintendent of college hospitals has just returned from France. Dr. Frank L. Apperly, professor of pathology is now in Dublin, Ireland, and will go from there to London for some study before returning to the colloge.

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Dr. Charles W. Morhart, formerly of Cleveland, Ohio, has been appointed to succeed Dr. V. R. Trapozzano, in the school of dentistry of the college.

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Dr. William P. Thompson, who has been connected with the hospitals of the Medical

College of Virginia for a number of years as assistant superintendent, resigned as of July 1st. He left for a vacation of several weeks at his home in North Carolina before taking up his future work.

**Married.**

Dr. Allen Haley, Huntington, W. Va., and Miss Mary Alice Spillman, formerly of Index, King George County., Va., June 17th. Dr. Haley graduated from the University of Virginia, Department of Medicine, in 1931.

Dr. George Edward Waters, class of '33, University of Virginia, Department of Medicine, and Miss Virginia Clayton Martin, of Charlottesville, June 24th. Dr. Waters is serving an internship at the Baltimore City Hospital, Baltimore.

Dr. Frank Andes Strickler, Richmond, Va., and Miss Sylvia E. Shafer, Troutville, Va., June 24th. Dr. Strickler graduated from the University of Virginia, Department of Medicine, in 1932 and served an internship at the Stuart Circle Hospital, Richmond, Va. He is now serving a residency at the University of Virginia Hospital.

Dr. Ira Lionel Hancock, Creeds, Va., class of '31, Medical College of Virginia, and Miss Mary Alice West, Newport News, June 24th.

Dr. Alexander McNeil Cox, Greensboro, N. C., and Miss Thelma E. Beazley, Richmond. June 24th. Dr. Cox graduated from the Medical College of Virginia in 1932.

Dr. Charles Neill Scott, class of '32, Medical College of Virginia, and Miss Florence Ryland Horton, Richmond, July 1st. They will make their home in Richmond, Va.

Dr. John Malloy Clayton Covington, Roanoke Rapids, N. C., and Miss Madge Westmoreland Balcome, Greenville, S. C., May 27th. Dr. Covington is a graduate of the University of Virginia, Department of Medicine, in 1929 and was formerly located at the Naval Hospital in Norfolk.

Dr. Emmett Vynston Richardson and Miss Gretchen Elizabeth Carroll, both of Glade Spring, Va., April 8th. Dr. Richardson graduated from the Medical College of Virginia in 1930.

Dr. Charles Singleton Dodd, Petersburg, and Miss Cordelia Powell Broaddus, formerly of Caroline, July 8th.

Dr. Edwin Raymond Mickle and Miss Ann Meek Ware Austin, both of Tappahannock, Va., July 7th. Dr. Mickle was formerly located at Williamsburg.

Dr. Stephen Dana Sutliff, Jr., Philadelphia, and Miss Dorothy Wood, June 24th. Dr. Sutliff graduated from the Medical College of Virginia in 1929 and was formerly located at Shippensburg, Pa.

Dr. Charles Edward Holderby, Williamsburg, and Miss Frances Marion Trainum, Gordonsville, June 20th.

**Mid-Tidewater Medical Society.**

The members of the Mid-Tidewater Medical Society were the guests of Dr. Blair Spencer on board his schooner-yacht on July 4th. The party included many guest physicians, and Dr. Warren F. Draper was guest of honor.

**State Bureau of Mental Hygiene.**

Because more room was necessary for its increasing activities, the State Bureau of Mental Hygiene and the State Mental Hygiene Clinic, Dr. William F. Drewry, Director, have been removed from the State Office Building to the Virginia Carolina Chemical Building at 11 South 12th Street, main office, Room 401. The Bureau with its clinic is a division of the State Department of Public Welfare. Its official personnel includes a trained psychiatrist, pediatrician, psychologist, psychiatric social worker, laboratory technician, student nurse and necessary clerical assistants.

The Medical Society of Virginia has for the past four years given its support to this work undertaken by the Bureau, especially in the interest of prevention of mental disorders in the state. The society has a special mental hygiene committee, consisting of four members who are psychiatrists and neurologists.

During the past year the Bureau has dealt with approximately eight hundred (800) patients, chiefly children and youths sent through juvenile courts, physicians, social agencies and individuals. All patients who are studied at the clinic, with the exception of the court cases, have the approval of a physician.

W. F. D.

**Richmond Meeting of the Southern Medical Association.**

The local medical society is making extensive plans for the entertainment of the Southern Medical Association in Richmond, November 14th-17th. The John Marshall Hotel is to be general headquarters and all meetings

will be held there or in nearby meeting halls. Wednesday evening there will be a general public session, following which the President's reception and ball will be given. Thursday and Friday will be given over entirely to section meetings and to organizations meeting conjointly. The alumni reunion dinners will be on Thursday evening. The usual golf and trap shooting tournaments will be held as well as other entertainment features for the physicians and ladies.

Following the meeting in Richmond, there will be a post-meeting day, Saturday, November 18th, in Washington, D. C.

Further information regarding this meeting may be secured from the Southern Medical Association, Empire Bldg., Birmingham, Ala., or from Dr. Fred M. Hodges, 1000 West Franklin Street, Richmond, general chairman of the Local Committee.

**The Piedmont Medical Society and the Albemarle Medical Society**

Held a joint meeting at Hemlock Lodge, near Criglersville, Va., June 1st. Interesting papers were presented by Drs. B. M. Randolph, Charlottesville; Beverley R. Tucker, and I. A. Bigger, Richmond.

Officers for the Piedmont Society were elected as follows: President, Dr. W. C. Mason, Gordonsville; vice-president, Dr. E. D. Davis, Jr., Crozet; and secretary-treasurer, Dr. W. E. Bray (re-elected), University.

**Dr. Paul D. Camp**

Has located at the Professional Building, Richmond, Va., for the practice of internal medicine. He is a graduate of the University of Virginia, Department of Medicine, in 1928, following which he served two years' internship at the Roosevelt Hospital, New York. Dr. Camp was then located for a year at the Massachusetts General Hospital as a Dalton scholar and cardiac resident, after which he was associated with Sir Thomas Lewis in the Department of clinical research at the University College Hospital, London. Before returning to the States, he studied on the continent, particularly in Vienna.

**Dr. Hawes Campbell, Jr.,**

Has been appointed resident physician and surgeon to the Virginia Manual Labor School for Boys and Girls at Hanover, Va. He is a graduate of the Medical College of Virginia in 1932 and served an internship at Johnston-Willis Hospital, Richmond, Va.

**Dr. Frank W. Hewlett**

Has opened offices at 3018 Porter St., Richmond, for general practice. He is a graduate of the class of '31, Medical College of Virginia, and has interned for the past two years at the Retreat for the Sick, Richmond, and the Jackson Memorial Hospital, Miami, Fla.

**Winchester Memorial Hospital to Discontinue Nursing School.**

Dr. Hunter H. McGuire, president, has announced that beginning September, the school of nursing of the Winchester Memorial Hospital will be discontinued after more than thirty years of operation. The reason given was for the sake of economy and the high expense necessary to the meeting of the new rules laid down by the American Nurses' Association.

**Graduate Fortnight of New York Academy of Medicine.**

The New York Academy of Medicine will hold its 1933 Graduate Fortnight from October 23rd to November 3rd, inclusive. Metabolic Disorders will be the theme of the Fortnight. The theoretical, phsysiologic and pathologic phases of metabolism, as well as of certain of the associated endocrinologic problems will be treated in a series of round table discussions and clinical demonstrations. The latter will be given in fifteen of the leading hospitals of New York City.

An exhibit will be shown in connection with the Fortnight, material having been collected from many institutions in Metropolitan New York. The varions aspects of metabolic disorders will be covered, including the history of metabolism; dietary constituents and their derivatives; drug and other therapeutic measures; general and special pathological metabolism; and laboratory methods and procedures.

The subjects will be illustrated by means of charts, graphs, photographs, microphotographs, transparencies, X-rays, gross and pathologic specimens.

The profession of the country is invited to participate in the Graduate Fortnight.

A complete program and registration blank may be secured by addressing Dr. Frederick P. Reynolds, the New York Academy of Medicine, 2 East 103rd Street, New York City.

**Books Available to Members.**

In addition to those previously listed, the following books have been received by the Library of the Medical College of Virginia and may be borrowed by members of the Society at any time, the only cost being return postage:

*Bailey, Percival*—Intracranial Tumors.
*Berkley, Comyns and Dupup, Georges M.*—Pictorial Midwifery. (2nd edition.)
*Bridges, Milton Arlanden*—Dietetics for the Clinician.
*Cameron, Hector C.*—The Nervous Child at School.
*Cantaron, Abraham*—Calcium Metabolism and Calcium Therapy. (2nd edition.)
*Cattell, J. McKeen and Jacques*—American Men of Science.
*Clark, Evans*—How to Budget Health. Guilds for Doctors and Patients.
*Emme, Earle E.*—The Adjustment Problems of College Freshmen.
*Freeman Walter*—Neuropathology.
*Goepp, Mae*—State Board Questions. (6th edition)
*Goldberg, Benjamin*—Procedures in Tuberculosis Control.
*Grollman, Arthur*—The Cardiac Output of Man in Health and Disease.
*Hale, Wm. J.*—Chemistry Triumphant.
*Howard, L. O.*—Fighting the Insects. The Story of an Entomologist.
*International Critical Tables of Numerical Data.* (Index v. 1-7.)
*Kallet, Arthur and Schlink, F. J.*—100,000,000 Guinea Pigs. Dangers in Everyday Foods, Drugs, and Cosmetics.
*Landman, J. H.*—Human Sterilization. The History of the Sexual Sterilization Movement.
*Lang's* German-English Pronouncing Medical Dictionary. (4th edition.)
*Lynch and Shields*—American Red Cross Abridged Textbook on First Aid. (3rd edition.)
*Merriam, John C. and Stock, Chester*—The Felidae of Rancho la Brea.
*Osler, William*—A Way of Life.
Poliomyelitis—A Survey Made Possible by a Grant from the International Committee for the Study of Infantile Paralysis.
*Pratt, Geo. H.*—The Mental Hygiene of Unemployment.
*Rankin, Fred W., et als.*—The Colon, Rectum, and Anus.
*Rolleston, Sir Humphrey*—Medical Aspects of Old Age.
*Russell, W. Kerr*—Colonic Irrigation
Salaries and Costs of Living of University Instructors.
*Scammon, R. E., and Calkins, L. A.*—Development and Growth of the External Dimensions of the Human Body in the Fetal Period.
*Scully, Frank*—Fun in Bed.
*Selzer, C.*—Lateral Dominance and Visual Fusion.
*Sherman, Mandel and Henry, Thos. R.*—Hollow Folk.
Shorter Oxford English Dictionary, The.
*Streeter, Burnett Hillman*—The Buddah and the Christ.
*Swanberg, Harold*—Radiologic Maxims.
*Rypins, Harold*—Medical State Board Examinations.
*Walker, K. M.*—Preparation for Marriage.
*White, Priscilla*—Diabetes in Childhood and Adolescence.
*White, W. A.*—Forty Years of Psychiatry.
*White, Wm. A.*—Crimes and Criminals.
*Williams, Anna W.*—Streptococci in Relation to Man in Health and Disease.
*Woods, Alan C.*—Allergy and Immunity in Ophthalmology.

**Dr. Lawson Cabaniss,**

Class of '32, University of Virginia, has completed his internship at the Church Home and Infirmary, Baltimore, Md., and is now resident physician at the Gill Memorial Eye, Ear, and Throat Hospital, in Roanoke, Va.

**Dr. W. M. Burwell,**

Chincoteague, Va., was elected in June for the third successive term a member of the City Council of that place.

**Dr. Marshall P. Gordon,**

Class of '27, University of Virginia, Department of Medicine, has opened offices in the Medical Arts Bldg., Richmond. His practice will be limited to urology. Dr. Gordon interned at the University of Virginia Hospital and served a residency at Johns Hopkins Hospital.

**Dr. W. H. Chapman**

Has located at Montvale, Va., for general practice. He is a member of the class of '29, University of Maryland, and served an internship at the Petersburg, Va., Hospital. He has recently been stationed at the U. S. Veterans Administration Hospital in Memphis, Tenn.

**Deaths of Physicians Published in 1932.**

During 1932, the deaths of 3,142 physicians of the United States were recorded in the *Journal of the American Medical Association*, as compared with 2,952 in 1931.

One hundred and eighty-eight physicians died as the result of accidents: eighty-seven committed suicide and there were eight homicides by shooting and one victim was beaten. Heart disease was again the leading cause of death, with 1,101 deaths; cerebral hemorrhage followed, with 346 deaths, and pneumonia was third, with 284 deaths.

A complete report of these statistics may be found in the *J. A. M. A.*, March 18, 1933.

**Dr. A. D. Daughton,**

Class of '29, University of Virginia, Department of Medicine, and recently a resident physician at the University Hospital, has located for practice at East Falls Church, Va.

**Dr. Benjamin W. Rawles, Jr.,**

Richmond, Va., after having been at the Uni-

versity of Virginia for the past three years, is now in New York where he will do post-graduate work in roentgenology and radium. He is a graduate of the University of Virginia, Department of Medicine, in 1930.

**Dr. James N. Williams,**

Richmond, Va., was recently elected vice-president of the Washington and Lee Club.

**Dr. Charles A. Young**

Has returned to his home in Roanoke, Va., after spending several weeks visiting clinics in European medical centers.

**Dr. Benjamin D. Bosworth,**

Of the class of '32, Medical College of Virginia, has located for general practice at Cascade, Va., after completing an internship at Gallinger Hospital in Washington, D. C.

**Dr. J. B. Mears,**

A Medical Director in the U. S. Navy, recently stationed at the U. S. Naval Hospital, Guam, M. I., has just been transferred to the U. S. Naval Hospital, League Island, Philadelphia, Pa. Dr. Mears is a former Virginian and an alumnus of the University of Virginia, Department of Medicine.

**Dr. Mildred Esther Scott**

Was recently appointed physician to State Teachers College at Fredericksburg, Va., and has entered upon her duties there. She will also assist in expanding the health teaching work in that school. Dr. Scott is from Kansas City, Mo., and served a residency at the Missouri Methodist Hospital in St. Joseph, Mo.

**Dr. Emory Hill,**

Richmond, Va., was recently appointed by Governor Pollard to serve as a member of the Commission for the Blind.

**Dr. W. C. Hutcheson,**

After spending several weeks with his parents in Boydton, Va., has gone to the Bellevue Hospital in New York where he will be assistant pathologist and diagnostician and also instructor in the Bellevue Medical College. He is a graduate of the University of Virginia, Department of Medicine, in 1929, and has served residencies at Valhalla, N. Y., and Jersey City, N. J.

**Interesting Hospital Statistics.**

In a recent issue of *The Modern Hospital*, Dr. H. S. Cumming, surgeon-general U. S. P. H. S., states that in the 7,000 hospitals in the United States, approximately 800,000 patients are found all the time. About 400,000 of these are mental patients and approximately 100,000 are suffering from tuberculosis. Nearly 800,000 babies are born in these hospitals each year.

Dr. Cumming states that during the present depression only one out of forty-five hospitals has been closed as compared with one out of six banks and one of twenty-two business establishments.

**Dr. A. D. Ferrell,**

Recently of Ronceverte, W. Va., has returned from the New York Post-Graduate Medical School and will be located at Lewisburg, W. Va., for the practice of eye, ear, nose and throat work. He is a graduate of the Medical College of Virginia, class of 1926.

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# Obituary Record

**Dr. George M. Preston,**

Lynchburg, Va., died July 3rd, presumably following an attack of angina pectoris, having passed away during the night. He was a graduate of the class of '81, University of Virginia, Department of Medicine, following which he did post-graduate work in Vienna, Leipsig, and Berlin. Dr. Preston had practiced in Lynchburg since completing his studies and had been president of the staff of the Memorial Hospital since 1924. He had been a member of the Medical Society of Virginia for thirty-two years.

The following resolution was adopted by the Lynchburg Academy of Medicine, Inc., at a meeting in July:

The Medical Profession of Lynchburg and vicinity, deeply sensible of the loss it has sustained in the death of Dr. George M. Preston, desires to record testimonial to his character as a gentleman and a physician, to extend sympathy to his surviving relatives and pay tribute of respect to his honored memory.

Dr. Preston was born in Bedford County, Virginia, descended from families prominently connected with the civic, social ,and professional life of Lynchburg. He graduated in medicine from the University of Virginia and continued post-graduate study from year to year in some of the best clinics in this country and Europe. He spent several years in Berlin and Leipzig and for many years devoted his summer vacations to travel at home and abroad, from which he derived cultural and scientific benefit that raised him well above the average of his time in preparation for the practice of his profession. He was a member of the Lynchburg Academy of Medicine, the Medical Society of Virginia, the American Medical Association, and a Fellow of the American College of Surgeons.

Dr. Preston was not the type that was known as "a good mixer," but was distinctly a gentleman of the old school, always calm, dignified and reserved and his extreme modesty was sometimes mistaken for aloofness, yet he was cordial to his friends, of whom he had many in all walks of life, considerate, courteous, and eminently fair to his fellow practitioner. The Golden Rule was his standard and he was a strict adherent to the Code of Medical Ethics. His clientele included many of the best families of Lynchburg and surrounding counties, to which he devoted himself unreservedly and in pursuing the even tenor of his way commanded the confidence and respect of a large circle of friends by whom he will be sadly missed.

He was a strong supporter of the old Home and Retreat, the first modern hospital to be established in Lynchburg, later rebuilt, enlarged and endowed and now known as the Marshall Lodge Memorial Hospital. When it was organized and recognized as approved under the plan of the American College of Surgeons with a full staff of physicians, he was promptly elected Chief of Staff and without dissenting voice, was re-elected as his own successor from year to year. It is believed that, largely due to his suggestions and influence with the donors, the Guggenheimer Memorial Hospital for Children has become an established and endowed institution in our city, extending its beneficient services to the crippled, the sick and the underprivileged children not only of Lynchburg, but to those of the surrounding section of the State.

In recognition of his long and useful life, in which he labored as a member of our profession, and as a mark of the high esteem in which he was held by us, it is ordered that this become a part of the record of this organization, be included in its minutes, and that a copy be sent to his family, and to the Virginia Medical Monthly.

Geo. J. Tompkins,
J. Henry Rawlings,
Bernard M. Kyle,
*Committee.*

**Dr. William Rush Gardner,**

Prominent physician of Hillsville, Va., died July 11th, following an illness of several months. He was forty years of age and graduated from the Medical College of Virginia in 1922. Dr. Gardner served in the medical corps during the World War. He was a member of the Masonic Order and several other fraternal organizations, and had been a member of the Medical Society of Virginia since 1924. His wife and two children survive him.

**Dr. Edgar R. Browning,**

Died at his home in Flint Hill, Va., July 8th, following a heart attack. He was sixty-two years of age and a graduate in medicine from the University of Maryland in 1895. Dr. Browning had practiced in Rappahannock County for thirty years and had been a member of the Medical Society of Virginia for thirty-six years. His wife and two sons survive him.

**Dr. John Williams Brown,**

Hampton, Va., died suddenly June 11th. He was fifty-nine years of age and graduated from the University of Virginia, Department of Medicine, in 1899. Dr. Brown was a veteran of the World War.

**Dr. Claude Wallop Colonna**

Died on May 14th at the U. S. Naval Hospital, Mare Island, Calif., at the age of thirty-nine years. He was a graduate of the Medical College of Virginia in the class of 1917 and entered the U. S. Navy that year. He served during the World War and was retired from the Service with the rank of Surgeon, Lieutenant Commander, in 1927, for incapacity resulting from an accident of service.

**Dr. Frederick Henry Baetjer,**

Pioneer in X-ray work in this country, died at his home in Catonsville, Md., June 17th. He was fifty-eight years of age and graduated from the Johns Hopkins University School of Medicine in 1901. Following his graduation, Dr. Baetjer did post-graduate work in Berlin, studying under Dr. William Konrad von Roentgen, the discoverer of X-ray. Since returning to this country, he had been connected with the faculty of Johns Hopkins as professor of clinical roentgenology. Dr. Baetjer had undergone more than a hundred operations for burns and injuries suffered in his study of X-ray, and the loss of all his fingers and one eye caused him to give up his duties at Johns Hopkins a year ago.

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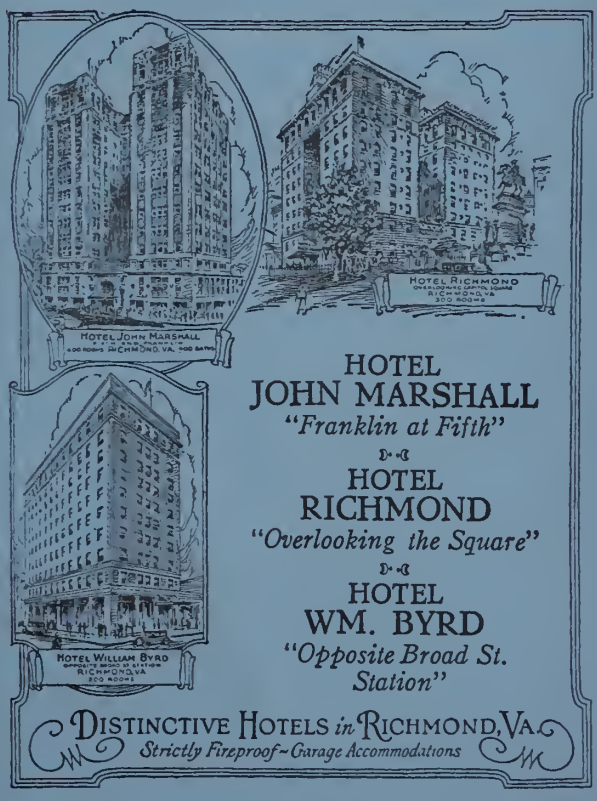


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| | % | % | % | % | % | % | Pablum is rich in minerals and vitamins. The calcium-phosphorus ratio of Pablum is 1.2:1, similar to that of average whole milk, considered the most favorable ratio for retention. |
| Calcium | 0.780 | 0.069 | 0.021 | 0.027 | 0.120 | 0.067 | |
| Phosphorus | 0.620 | 0.392 | 0.125 | 0.093 | 0.093 | 0.180 | |
| Iron | 0.024 | 0.0038 | 0.0008 | 0.0009 | 0.00024 | 0.003 | |
| Copper | 0.0013 | 0.0005 | 0.00017 | 0.00034 | 0.000015 | 0.00023 | |
| Moisture | 7. | 8. | 11. | 35. | 87. | 74. | |
| Protein | 15.0 | 15.2 | 11.0 | 9.2 | 3.3 | 13.4 | Calories, fats, proteins, and carbohydrates no longer constitute a serious nutritional problem. |
| Fat | 3.0 | 7.3 | 1.4 | 1.3 | 4.0 | 10.5 | |
| Carbohydrate | 71.3 | 66.2 | 76.3 | 53.1 | 5.0 | — | |
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## THE PHARMACOLOGY OF DIGITALIS.*

HARVEY B. HAAG, M. D., Richmond, Va.

Nearly four hundred years ago, the plant we now know as digitalis purpurea was so named by Fuchsius. For over two centuries it led a severely tranquil existence, being only at times called upon to serve as an emetic and expectorant and externally as a dressing to wounds. Towards the latter part of the 18th century, William Withering, of Birmingham, England, detected it as the therapeutic agent in a formula, kept secret by its feminine exploiter, which was gaining an unusual popularity as a remedy for dropsy. After ten years of clinical observation, Withering, in 1785, published his great book, "An Account of the Foxglove and Some of Its Medical Uses: Practical Remarks Upon Dropsy and Other Diseases." Since then digitalis has known no rest; the mass of literature built up around this one drug is astounding; and yet, in spite of the ceaseless endeavors of numerous clinical and laboratory experimenters throughout the world, there remain unanswered a great many questions pertaining to its chemistry and pharmacology.

Of the several species of digitalis, digitalis purpurea, probably because of its greater prevalence, has come into most prominent use; though at the present time digitalis lanata, which is more potent than the purpurea, is receiving the attention of European investigators.

Much and continued dispute has raged over the nature of the active principles of digitalis; but at the present time this mooted question has been somewhat clarified by recent studies, chiefly from abroad, in which the activity of digitalis is described as being due to three crystalline, water insoluble glucosides, namely: digitoxin, bigitalin, and gitalin. These compose about 1 per cent, by weight, of the dry leaf, and are present in about equal amount. The glucosides all have the common property of hydrolyzing under the influence of acids and ferments to yield a common sugar and a "genin." This genin gives the glucoside its characteristic action; but uncombined it is much less active and much less persistent than the whole glucoside. Chemically the three principles are similar, consisting of heavy molecules containing unsaturated lactone chains. Digitoxin, the most certain and first isolated of these compounds, has a formula $C_{41}H_{64}O_{13}$. Physiologically digitoxin is characterized by its higher toxicity, its more rapid absorption, and delayed elimination as compared to gitalin and bigitalin, and it probably gives to digitalis most of its so-called "cumulative" effect. Again, digitoxin is the most stable of the three. It is interesting to note that although the pure principles are but poorly soluble in water, they can be extracted from the leaves by cold water infusion.

In addition to these essential agents, digitalis contains compounds which are common to most plants. The saponin, known as digitonin, has claimed the attention of several investigators, the earlier ones attributing the nausea and vomiting of digitalis to the gastrointestinal irritation supposedly produced largely by this agent; others later believed that it rendered the pure principles soluble in water, and now the opinion is voiced that it increases the cumulative effect of the pure principles but diminshes their absorption from the gastrointestinal tract. In the final analysis we shall probably find that this somewhat maligned saponin plays little if any important part in either the chemistry or pharmacology of digitalis.

Rational therapeutics demand that the potency of a particular medicament be known. In the case of most vegetable drugs this is a relatively simple requirement; for instance, opium can readily be standardized for its morphine content by certain definite chemical manipulations. Unfortunately, the standardization of digitalis is not so simple. Even if the principles above mentioned are those which are responsible for the therapeutic activity of

*From the Department of Pharmacology, Medical College of Virginia, Richmond, Va.

Read at the sixty-third annual meeting of the Medical Society of Virginia in Richmond, November 1-3, 1932.

digitalis, the great difficulty of extraction alone would militate against this type of chemical assay. Equally as disturbing is the fact that different specimens of digitalis yield different amounts of these glucosides; thus adequate chemical standardization could be evolved only after it had been determined what proportions of each of these should exist in a leaf therapeutically satisfactory. The various color reactions for assaying digitalis are practically worthless. This unhappy condition early led to the use of animals in assaying digitalis, frogs being used first about the middle of the 19th century. Since then, numerous species of animals, including even man, have been proposed as subjects for digitalis standardization. At the present time the two most popular methods are: first, the one hour frog method perfected by Houghton, and now the official pharmocopoeial method, and, second, the intravenous cat method of Hatcher and Brody. An active tincture will cause systolic stoppage of the frog heart one hour after the injection into the lymph sac of 0.006 c.c. per gram frog weight. Judged by the cat method the same preparation would cause the death of an etherized cat in about ninety minutes during which time about one c.c. of the tincture per kg. cat weight had been injected intravenously. This latter figure for cats is termed a "cat unit," and it follows that the smaller its numerical value the more potent the preparation. Besides the fact that in one of these tests a cold blooded animal is used and in the other a warm blooded, there is the further essential difference that in the frog method the question of absorption plays a part, whereas this is not true for the cat procedure in which the drug is injected directly into the circulation. Hence, it is conceivable that a preparation, because of poor absorbability, may have a low value when assayed by the frog method, and yet be quite active when tested upon cats. The criticism that these tests, because they measure toxicity rather than therapeutic effectiveness, do not properly evaluate digitalis, hardly need be discussed in view of the successful application, particularly of the cat method, to clinical therapeutics by so many prominent cardiologists.

The question as to the stability of digitalis and its preparations has provoked an unusual amount of investigation. Let it be said at once that the dry powdered leaf appears to be the most stable, and therefore the most reliable. Specimens of leaves have been shown to be of standard strength after more than forty years. Tinctures vary in their rate of deterioration, but as a rule lose their potency rather slowly. Some tinctures have been reported as being only about one-half their original strength after six months, but again it has been established that others have retained their original activity after five years. The most recent work upon a series of tinctures showed no loss after one year, a loss of about 12 per cent after the second year and after eleven years about 20 per cent loss in potency. Attempts at stabilizing the tincture have not been particularly fruitful. Now that more is known concerning digitalis chemistry, this can be more fully appreciated. As the digitalis preparations are rendered more refined they apparently become more stable, and, like ordinary tinctures, increase in stability as the alcoholic content is increased. The aqueous preparations are the most unstable; however, the old view that the infusion loses its strength overnight is no longer tenable. Certainly under ordinary clinical conditions it retains its full activity for at least a week. When kept in a refrigerator or in well filled. sealed, sterile containers it loses its potency very slowly.

It might be mentioned here that a study by the cat method of the potency of twelve samples of tincture of digitalis purchased in different sections of Virginia several years ago, gave values ranging from 25 per cent above to 60 per cent below the average accepted figures. That this is not a local condition is evidenced by results obtained by other similar studies both in this country and abroad.

Observations as to the activity of the various proprietary preparations have in the past shown that these too display differences in potency when tested by any one method. However, it should be borne in mind that this is not necessarily due to any dereliction on the part of the manufacturers but rather is probably the result of failure to agree upon any one definite standard. There is little reason to believe that these products are more stable than the average official tincture, or that they are therapeutically superior.

That digitalis, either in the form of the tincture or the powdered leaf, is absorbed from the gastro-intestinal tract with more ease than is ordinarily thought, is shown by the fact that definite effects upon the heart can clinically be detected in about two hours after the oral administration of a suitable amount.

Rarely a preparation is encountered which is active by assay, but because of poor absorbability is therapeutically deficient. The rectal administration of digitalis is apparently on the increase, its advocates claiming that it can be given to patients who are nauseated and prone to vomiting, and as it is absorbed from the rectum by the inferior hemorrhoidal veins its avoids passage through the liver which might destroy some of the principles. The rate of absorption of digitalis from the rectum is about the same as that following its oral administration.

After absorption a higher concentration of the active principles is found in the heart muscle than in any other tissue, the liver containing one-fourth and the kidney one-half the percentage present in the heart. The glucosides, particularly digitoxin, form stable compounds with the cardiac tissue, while the genins are more easily washed from the heart muscle. The action of digitoxin persists for many days; while the effects of gitalin and bigitalin are fleeting.

The direct action of digitalis upon the heart is to increase the tone, the contractility, the irritability, the refractory period, and the conduction time. By a direct action it also apparently increases the metabolism of the heart. By a reflex action arising from the heart or other viscera, the vagus is stimulated with resulting slowing in rhythm and again inhibition of conduction. In the disease in which digitalis therapy is most encouraging, namely, auricular fibrillation, the impairment of conduction and the increase in ventricular tone contribute largely to the clinical improvement. Peculiarly enough it has lately been shown that the drug itself is capable of producing auricular fibrillation in toxic amounts. It is important to remember that studies upon normal men and animals indicate that digitalis can actually diminish cardiac output, at times astoundingly. This has been explained as resulting from the increase in cardiac tone, and, possibly, pooling of blood in the hepatic circulation. Again, mention should be made of animal experiments which demonstrate that digitalis is capable of causing constriction of the coronary vessels, a laboratory finding which has been borne out by clinical observations that patients occasionally suffer anginoid pains during digitalis therapy. Along similar lines experimental trials have led to the conclusion that the heart in coronary obstruction is no more sensitive to digitalis than is the normal organ. It has occurred with laboratory animals that apparent recovery has followed the administration of large doses of digitalis, only to give way several days later to death. Somewhat similar delayed deaths have been observed clinically and it would appear that this question deserves further study.

The power of digitalis to increase the white cell count has been recorded, as well as its ability to stimulate pancreatic secretion.

While it is generally believed that among the first demonstrable effects of digitalis on the heart is a beginning inversion of the T-wave, this has recently been doubted as a result of observations both upon humans and animals. Indeed, the ability of the drug to even produce any appreciable T-wave change has been questioned. Within the past several months lengthening of the Q-S interval has been stated to be among the first of the electrocardiographic changes.

As is well known, one of the earliest clinical signs of digitalis intoxication is nausea and vomiting. This is said to result from reflex stimulation of the emetic center the stimulus arising from the heart or other organs. Certainly the power of digitalis to cause nausea and vomiting is intimately related to its therapeutic effectiveness. It is an interesting and important phenomenon that this vomiting reflex may become depressed after repeated doses of digitalis, thus making it possible for a patient to become severely poisoned with the drug without at the same time manifesting emesis.

The diuresis that digitalis so frequently produces is usually explained as the result of the increase in the blood flow through the kidney, brought about by the improved cardiac activity. Nevertheless, there is evidence which indicates that the drug might have also a more direct diuretic effect upon the renal tissue.

There has been some controversy concerning the use of digitalis in diphtheria. The more recent writings, based upon animal experimentation, conclude that digitalized animals tolerate diphtheria toxin much better than do untreated controls.

In closing, it might be well to cite, as an example of the difficulties besetting the pharmacological explanation of the digitalis effects, a paper by Weiss and Ellis in which they state that in four patients with rheumatic heart disease associated with reduced functional capacity, digitalis produced clinical improve-

ment, although there was no increase in cardiac output, no change in velocity of blood flow or circulating volume and no significant change in vital capacity. They suggest that the resulting reduced heart rate after exercise might *per se* constitute an improvement so far as economy of the heart is concerned. The effect of digitalis on nervous structures in maintaining important cardio-vasomotor reflexes may have a considerable significance.

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### Discussion

Dr. D. C. Ashton, *Richmond:* The action of digitalis, with the exception of certain contributions that have been made as the result of investigation with instruments of precision, is not much more thoroughly known now than it was at the time Withering introduced it in 1785. Withering at that time advocated that the drug should be used in dropsy. He did not know anything about cardiac or renal disease but realized that he had a medicine, made from the leaves of the purple foxglove, that was useful in dropsy. He advised that it be given until the pulse was slowed, until the patient became nauseated, or until diuresis was produced. As a matter of fact, that is about all we know today. So far as the amount of digitalis that a patient requires is concerned, we certainly do not know it, in spite of attempts at standardization.

Digitalis is most properly applied in two diseases: Congestive heart failure, in the first place, and auricular fibrillation, in the second place. It is equally valuable in either of the two conditions. It is also valuable in other diseases of the cardiac apparatus. By some it is believed that in elderly patients with diminished cardiac reserve, without any actual failure, or any rhythmic disturbance it may be of some help.

In addition to the various cardiac disorders treated by digitalis, there are a number of other diseases in which it is used, among them the acute infections. There is a good deal of controversy as to whether digitalis is of value in pneumonia. It was thought to be of distinct value, but a number of researches in the last two or three years reveal that digitalis may not only be of no value in pneumonia but may do harm. Then its use has been advocated in patients after operation who are suffering from shock and vasomotor collapse. But in those patients who have rapid pulse and low venous pressure I think it is entirely unwise to use digitalis.

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## OBSERVATIONS IN THE MANAGEMENT OF ONE HUNDRED FOREIGN BODIES IN THE AIR AND FOOD PASSAGES.*

E. G. GILL, M. D.,
and
JOHN A. PIICHER, Jr., M. D.,
Roanoke, Va.

We present this subject to the medical profession feeling that it is the duty of every bronchoscopist to impress upon those in general practice the indications and limitations of this speciality. It is not our purpose to present anything new in diagnosis or treatment but rather to emphasize again the importance of foreign bodies in the consideration of obscure chest conditions. The number of overlooked foreign bodies and wrong or delayed diagnoses is much too high. When the history is suggestive and with the physical findings, the

Open safety pin in esophagus, point up. Infant 1 month of age.

Open safety pin in cardiac end of esophagus, point up. Patient age 3 years.

*Read before the sixty-third annual meeting of the Medical Society of Virginia, in Richmond, November 1-3, 1932.

X-ray is all that is necessary to clear up the diagnosis of an apparently obscure case.

In reviewing the records of one hundred cases, we wish to present the following data:

1. The symptomatology of foreign body in the respiratory tract.

Patient age 8 years. French penny in upper esophagus.

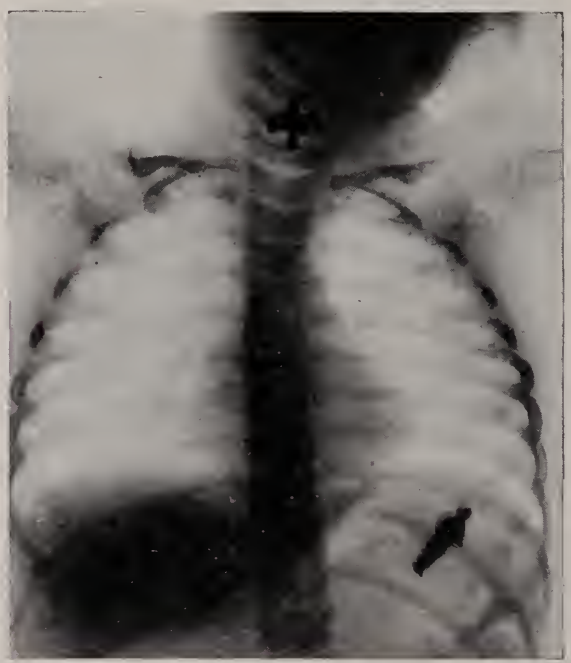
Patient age 6 years. Copper rivet right main bronchus. Duration 24 hours. Bivalve obstruction. Lateral view.

2. Foreign body in esophagus.
3. Location of foreign bodies in respiratory tract.
4. Cause of deaths in this series.
5. Number of tracheotomies.
6. Our methods of preparation of patient for endoscopy:
   a. Preliminary medication.
   b. Anesthesia.

Symptomatology of Foreign Body in Air Passage: A definite history of choking followed by severe coughing with or without cyanosis must always be considered as a foreign body until proven otherwise by every diagnostic procedure at our command. The types of bronchial obstruction are:

1. Bivalve which may only have cough as a symptom; later may have symptoms of lung suppuration.

2. *Type* 2. Check valve. Air is trapped in the invaded lung producing greater transparency on the obstructed side with displacement of the heart to the free side and depression and flattening of the dome of the diaphragm on the invaded side.



Patient age 3 years. Case of multiple foreign body in food passage. Jack rock in upper esophagus; doll baby in stomach.

3. *Type* 3. *Obstructed atelectasis.* Results in drown lung, later in abscess. This condition is not affected by inspiration or expiration and is clearly shown on X-ray. Physical

signs are characterized by absence of breath sounds and dullness on side of involvement. Heart is displaced towards involved side.

Patient age 3 years. Obstructive emphysema of left lung due to a non-opague foreign body (peanut kernel). Note that the left diaphragm is displaced to opposite side. Prompt recovery following removal of peanut.

Non-radiopague foreign body, pento bean in right main bronchus, causing complete obstruction with atelectasis and drowned lung. Present two days. Note (a) displacement of heart and mediastinum to right or invaded side, (b) depression of left diaphragm, and (c) transparency of un-invaded side.

Radiograph four days following bronchoscopic removal of one-half of the bean. The right main bronchus was uncorked, thereby restoring ventilation and drainage. Note (a) normal position of heart, mediastinum, and diaphragm.

Foreign Body in Esophagus: History of choking and gagging followed by dysphagia is always suggestive of foreign body in the esophagus. Children may have drooling saliva and regurgitation of food. Symptoms referable to the respiratory tract may be caused by a large foreign body pressing on trachea or from overflow of secretions into the larynx. Esophageal foreign bodies have eroded from the esophagus into the trachea.

First Analysis of One Hundred Case Records

| | |
|---|---|
| Foreign body in Hypo-pharynx | 7 |
| Foreign body in Larynx | 5 |
| Foreign body in Trachea | 4 |
| Foreign body in Right Bronchus | 20 |
| Foreign body in Left Bronchus | 9 |
| Foreign Body in Esophagus | 48 |
| Foreign body in Stomach | 7 |
| Total | 100 |

Second Analysis of One Hundred Cases

| | |
|---|---|
| Deaths due to: | |
| Lung infection | 2 |
| Acute pneumonitis following removal of foreign body | 1 |
| Perforation of bronchus | 1 |
| Total | 4 |

Third Analysis of One Hundred Cases

| | |
|---|---|
| *Tracheotomies necessary:* | |
| 1st. Dyspnea prior to bronchoscopy | 7 |
| 2nd. Dyspnea following bronchoscopy | 2 |
| 3rd. For removal of foreign body | 2 |
| 4th. For aspirating pus in lung abscess | 1 |
| Total Tracheotomies | 12 |

Fourth Analysis of One Hundred Cases

| | |
|---|---|
| Multiple foreign bodies | 1 |
| More than one attempt necessary to remove foreign bodies | 4 |
| Failure to remove | 3 |
| Number expelled by coughing | 3 |
| Number passed into stomach and recovered | 7 |
| Youngest patient | 1 month |
| Oldest patient | 76 years |
| Duration foreign body | 2 hours to 5 years |

Fifth Analysis of One Hundred Cases

| | |
|---|---|
| Number open safety pins point up in esophagus | 3 |
| Number open safety pins point down in esophagus | 1 |
| Number open safety pins point up in larynx | 1 |
| Number portions of a safety pin in bronchus | 1 |
| Total | 6 |
| Number removed endoscopically | 3 |
| Number passed by bowel | 2 |
| Number coughed from larynx | 1 |
| Total | 6 |

Sixth Analysis of One Hundred Cases

| | |
|---|---|
| *Mineral Kingdom:* | |
| Dental plates | 2 |
| Mattress tacks | 2 |
| Shipping tack | 1 |
| Carpet tacks | 2 |
| Portion lamp chimney | 1 |
| Nails | 2 |
| Coin (French penny) | 1 |
| Coin (penny) | 1 |
| Coin (nickels) | 4 |
| Coin (quarters) | 2 |
| Piece of wire screen | 1 |
| Safety pins (open) | 2 |
| Safety pins | 4 |
| Portion of safety pin | 1 |
| Fibrinous cast | 1 |
| Glass beads | 3 |
| Jack rocks | 2 |
| Intubation tube | 2 |
| Straight pin | 1 |
| Copper rivet | 1 |
| Clip binder (Chicago screw post) | 1 |
| Pipe stem | 1 |
| Piece of wire | 1 |
| Twig of cedar shrub | 1 |
| Overall buttons | 2 |
| Suit case rivet | 1 |
| Metal screw from banjo | 1 |
| *Vegetable Kingdom:* | |
| Splinter of wood | 1 |
| Portion corn cob | 1 |
| Coffee grains | 2 |
| Peanuts | 7 |
| Husk of peanut | 1 |
| Grains of corn | 6 |
| Beans | 2 |
| Watermelon seeds | 2 |
| Chestnut | 1 |
| Piece of grass seed | 1 |
| Nut shell | 1 |
| *Animal Kingdom:* | |
| Bolus of meat | 9 |
| Chicken bones | 10 |
| Bolus of food | 1 |
| Squirrel bone | 1 |
| Beef bone | 1 |
| Fish bones | 8 |
| Chicken gizzard | 1 |
| Vertebra of squirrel | 1 |

Table 3 gives seven tracheotomies prior to bronchoscopy. All of these cases were in a dyspneic condition when admitted to the hospital. Tracheotomy was done for relief of dyspnea and not for removal of foreign body. If the patient's condition permits, we remove the foreign body immediately following the tracheotomy, otherwise we wait until conditions are favorable for bronchoscopy. In only two cases was tracheotomy necessary following bronchoscopic removal of a foreign body in a child. In children under three years of age, laryngeal swelling sufficient to demand a tracheotomy often develops after bronchoscopy, especially in cases of organic foreign body. This complication can be reduced to a large degree by following three definite procedures, namely; relaxation of patient; *do not* use over size bronchoscopic tubes; *do not* prolong the operation. Ten to twenty minutes is enough time for a child under two years of age. Tracheotomy for removal of foreign body was done in two cases. There are certain cases such as large irregular foreign bodies which should be removed through the tracheotomy wound rather than undergo the very certain possibility of stripping it off when attempting to remove it through the swollen and narrowed glottis. This complication may result in sudden death from asphyxiation.

We have abandoned the idea that anesthesia, local or general, is unnecessary in children. Our policy is to give some form of anesthetic in every case that is not dyspneic. In children we obtain muscular relaxation either by use of morphine with atropine (using Young's rule) or sodium amytal per rectum. For adults we use sodium amytal and supplement with ether if necessary, being *mindful never completely to abolish the cough reflex.* We feel confident that better work and less traumatism will occur under muscular relaxation which is impossible without some degree of anesthesia. We have never had a patient to develop pneumonia following bronchoscopy under ether anesthesia. We never had patient develop pneumonia following a tracheotomy.

## Conclusions

A large percentage of all foreign bodies occur in children under five years of age. We have found tracheotomy necessary in only two

cases following bronchoscopy. This low percentage has been due to the observance of three of our bronchoscopic fundamentals, namely:

1. Proper size tubes with the head held in the correct position.
2. Muscular relaxation.
3. Short working time.

Esophageal foreign bodies as a rule lodge at the level of the first constriction, the cricopharyngeus muscle. Open safety pins, point up, are easily removed if above the cricopharyngeus muscle. When below this point, they usually pass into the stomach and are recovered from the bowel.

It is perfectly safe to leave the foreign body (open safety pin) in the stomach for three weeks if X-rays at intervals show the point in different positions. Open safety pin point down does not constitute a mechanical problem. We have had six cases of open safety pins in the air and food passages and no deaths. Two passed into the stomach and were recovered, one in a thirteen months old baby and the other in a child three years old.

Those of you who have had experience in this work will agree, I am sure when I say that there is no branch of surgery or medical practice that requires the same degree of precision, promptness and accuracy in the recognition of anatomical landmarks and *cooperative team work* as does endoscopy. It is not a "*one man job.*"

*Department of Bronchoscopy,*
*Gill Memorial Eye, Ear and Throat Hospital.*

### Discussion

Dr. E. U. Wallerstein, *Richmond:* I shall not go into detail in the management of these cases. First, I think Dr. Gill is to be congratulated upon the presentation of his paper and the results that he has attained. I cannot agree with him about anesthesia. I believe anesthesia in bronchoscopy and esophagoscopy is like anesthesia in any other surgical procedure; one must choose his case. If an esophageal foreign body is large and there is considerable spasm, I believe that general anesthesia is indicated; or if the foreign body is very irregular, or pointed, again I say general anesthesia. However, all of us who do bronchoscopy have found out through practical experience that we can go beyond Young's rule in giving morphin; we go considerably beyond Young's rule; and I do not believe that we injure the youngsters, and we get good relaxation.

I believe that in a mixed audience such as this, consisting more of general men than bronchoscopists, a word should be said about the management of the case before the patient reaches the bronchoscopist. Dr. Gill has brought out very well that there is no occasion for excitement. More harm is often done by ill considered measures. I have had several cases in which the doctor has tried to use a bougie, either in pushing down the foreign body or pulling it up, and real trauma has been done and considerable risk has been taken, to the injury of the patient. There is, however, one type of foreign body that needs immediate attention, and that is a peanut in the bronchus. There hours count, and it is incumbent upon the attendant to see that bronchoscopy is done as quickly as possible.

Dr. Claude Moore, *Washington:* I think it is very unfortunate that Dr. Gill could not have been at the beginning of the program this afternoon, when there were quite a few laymen here.

It is very consoling to find the number of good bronchoscopists in cities of forty thousand people and above. I live in Washington, and I see in the newspapers, every two or three months, articles about people coming from as far away as Arkansas and Mississippi, going to Philadelphia, to Chevalier Jackson.

Doing nothing but radiology, I should like to emphasize again the valuc of X-rays of the chest in chronic conditions. Large numbers of institutions now will not admit employees until they have had X ray examination of the chest to rule out not only tuberculosis but also other chronic conditions. As you may know, the Mayo Clinic X-rays the chest routinely in all diagnostic cases. They will not employ a doctor there without an X-ray examination of his chest. Yale University makes an X-ray examination of the chest of every student on admission. Frequently conditions will be found such as Dr. Gill has mentioned. Unsuspected foreign bodies may remain in the chest for years. By means of the fluoroscope, particularly using all diameters, lateral and antero posterior, the bronchoscopist is frequently able to use his forceps and get hold of an opaque foreign body in the lung tissue, pulling it through the scar and fibrous tissue without ever having seen the foreign body except in the fluoroscope. Quite often the radiologist, by means of the fluoroscope, can be of a good deal of value to the bronchoscopist, just as he is to the surgeon in setting fractures

Dr. Thomas E. Hughes, *Richmond:* I enjoyed exceedingly Dr. Gill's report of his cases. I merely want to show one or two slides of cases that we have had in the last two or three weeks.

This first case (slide 1), is one in which an adult lady swallowed a safety pin one night. She was hanging some curtains and put a couple of safety pins in her mouth; someone sa'd something to make her laugh, and she swallowed one of them. The pin is just below the diaphragm. We gave her H. M C. hypodermically and with the use of a little cocain introduced the esophagoscope. It did not reach the pin, however, and I thought it had passed into the stomach. With the aid of the fluroscope we found the pin in the same location, so we introduced a longer esophagoscope. The point of the pin was up, which, of course, makes removal more difficult. The patient went home the following day and made an uneventful recovery. Dr. Gill's method, as he said, is to leave the pin alone when it has passed that far and perhaps recover it later. In this case, however, we got it out all right.

Slide 2 shows a peanut in the right main bronchus of a little girl sixteen months old. A small sister was feeding her peanuts. This happened last Monday. Saturday night the family physician was called in; she had had no attention until that time. He got the history of the child having eaten peanuts and called up the hospital, and we were called in to see the case. The X-ray demonstrates very prettily the case on inspiration and expiration. The

foreign body is in the right main bronchus and illustrates the obstructive emphysema of which Dr. Gill spoke. The air can get into the lung but can not get out. As you all know, the diameter of the bronchus is larger on inspiration than on expiration, so the air goes into the lung, is trapped, and can not get out. The diaphragm is shoved down on the side of the foreign body and is up on the other side. On expiration, as the air is expelled from the left lung (the unobstructed side), the mediastinal structures come further to the left side, and the diaphragm extends higher on expiration on the left side than it does on the right.

There is one interesting thing about this case. Although the peanut had been in the bronchus for practically six days, there was very little inflammatory reaction in the bronchial tree.

This case was done without any anesthesia. She was given (sixteen months' old), 1/24 of morphin and 1/450 of atropin. The bronchoscopy was done Saturday night, and she went home Sunday morning and has gotten along nicely since.

We are told that vegetable foreign bodies produce a great deal of inflammation in the bronchial tree, but there was very little inflammation in this case. This was a salted cooked peanut. We had another case, a few weeks ago, that had inspired a raw peanut. That occurred at eight o'clock in the morning and that night, when it was removed, there was a very marked inflammatory process.

Dr. E. T. Gatewood, *Richmond:* I think one point might be stressed in these cases, and that is in the diagnosis or the probable diagnosis. I shall exemplify my remarks by illustrating a case that was referred to me sometime last year. This child gave a history of feeding chickens, and a chicken flew up in his face while he had some corn in his mouth. He had a choking spell and a crying spell, but after that went on with little difficulty. A physician was called three or four days later, because the child had some fever He treated the child for a week and, when he did not improve, sent him to Richmond for examination. He went to a well-known hospital and was examined by an internist, who sent him back to the referring doctor with a probable diagnosis of whooping cough. The parents were dissatisfied, so they changed doctors in the rural district. The next doctor treated the child for a few days and sent it to a town where they had a hospital but did not have facilities for removing foreign bodies, so the child was sent back to Richmond. He came to Johnston-Willis Hospital, where we found a grain of corn in the right bronchus and removed it. Now, that child was nearly moribund. If these cases are not recognized early, often there is little that can be done to save them.

I think Dr. Gill makes a good point in the use of general anesthesia in selected cases. Dr. Jackson does not use it at all, and I think some of the other Northern clinics do not use it. Some of these cases take general anesthesia well, and it saves them a lot of torture and mental anguish. In many ways it is a great help

I can not agree with Dr. Gill in leaving a safety pin in the esophagus, especially if the point is downward. I believe if it were in my child I should want it removed.

We are indebted to Dr. Gill for this splendid presentation of these interesting cases.

Dr. Gill, closing the discussion: I should like to thank the gentleman for their discussion.

Answering Dr. Gatewood, he misunderstood me with reference to the open safety pin, point down. Those are never left in; they will never pass. I was referring to the open safety pin with the point up.

With reference to what Dr. Moore said, and referring to the articles that have appeared in the lay press, I do not think the articles have been fair to the Southern cities where this work is being done. It is done successfully in Richmond, in Charlotte, N. C., in Atlanta, and in other places.

## RENAL FUNCTION TESTS.

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Far back in the middle ages and in the days of the medicine-man, the doctor was always pictured as a man in flowing robes or fantastic costume holding in his hand a urine specimen glass. The late Dr. Warthin, of the University of Michigan, had a collection of old medical drawings taken from books in ancient Latin and Greek and in his collection the physician is always pictured in this manner. By close observation, sight, the odor and the taste of urine, physicians were supposed to be able to diagnose almost any disease. Hahn noticed the absence of the odor of violets in the urine of gouty patients after the ingestion of turpentine; Razer has noted the absence of that peculiar odor due to the ingestion of asparagus in the urine of patients with nephritis. There were countless observations of this kind made by the physicians of old. Today the doctor, it is true, pays some attention to the appearance, the color, the odor, the reaction and the clarity in making his usual routine examination of a specimen, but he also has developed other tests and observations which to him now seem much more important in giving him a true evaluation of the renal function.

During the last twenty-five years a great deal of work has been done in an attempt to develop an ideal renal function test. There have been countless ones proposed but most of them have fallen into disfavor almost as soon as they have been used. In the judging of a test of renal function, the practicability, as well as the efficiency, should be considered, and one should see that it has the following qualifications:

1. It should indicate within narrow limits the constant amount of work performed by normal kidneys.

2. It should indicate constant variations in function when constant abnormal conditions are present.

3. It should indicate functional alterations

with the development of histological changes when such conditions exist.

4. It should afford an indication of the absolute work accomplished as well as the relation of this to the normal standard under all conditions.

5. It should be applicable with a simple technique.

6. It should be applicable without injury to the patient and without exerting a strain upon the kidneys themselves.

7. The method should be mathematically accurate.

8. It should be easy of interpretation.

9. It should also be capable of revealing the latent or reserve force which can be used by the kidney when under strain.

Renal function tests as employed at present fall into two groups: First, tests of retention, namely, an estimate of the variation of substances normally present in the blood in fairly constant amounts; and, second, tests of excretion, namely, an estimate of the amount of certain substances normally present in the urine or of a foreign substance, a known amount of which has been administered. Probably the best habit of renal function determination is a combination of these two groups: that is, the union of a retention test and an excretion test. The physician of today perhaps does not help himself as he should to one of the best and most dependable tests of renal function which we have; namely, the specific gravity of the urine or the "Wasser Versucht" of the Germans. In Europe far more attention is placed upon this phase of examination than upon the more modern test of excretion. At the International Congress a few years ago Chabanier discussed this subject and gave us the modern European conception of the value of tests of excretion relative to the surgery of the urinary tract. In his paper there was a noticeable absence of references to clinical signs in individual cases but as a whole they depended more upon the specific gravity test plus the blood urea examinations. We found that Von Lichtenberg in Berlin depended very strongly upon the "Wasser Versucht" which is in reality a test of the kidney to concentrate the urine. The technique is as follows: 1,500 c.c. of tea is given in the A. M., and no other fluid is given all day, and (1) specimens are collected every hour for eight hours, and (2) the quantity of each specimen and the specific gravity are recorded. A normal test should show: (a) Difference of fifteen points in specific gravity, usually from 1.005 to 1.020. (b) The first four hours should show a quantity of more than 1,000 c.c. with a low specific gravity. (c) The last four hours should have a much greater specific gravity and the better the renal function the higher the specific gravity. It seems to me, however, that the specific gravity test is not easily applied to the majority of our prostatic cases and does not so well fulfill the necessary requirements for us. It does not show particularly well the improvements in renal function as we would have it. In the last couple of years in France there has been a change in their habit of renal function determinations and particularly in Marion's Clinic. They tested out very carefully the various renal function tests and have come to the conclusion that the phthalein test plus the blood urea examination are the two most reliable renal tests. In the United States the attitude at present is similar but in addition we feel that the renal tests supplement and do not supplant direct observation of the patient; that the additional information gained from these renal tests is, however, indispensable; that no single test in itself is conclusive evidence of the exact health of the kidneys but that they are merely more evidence gained in completing the clinical picture which we are trying to construct of the whole individual patient. Today we are hearing a lot for and against the specific gravity determination as a differential renal function test. It seems to be quite reliable in the majority of cases but not perhaps as accurate as other ones at our disposal. However, we think, as a rule, we in this country do not pay sufficient attention to the knowledge obtained from simple specific gravity tests.

The second important test of retention is a measurement of the blood urea or of the blood urea nitrogen. We use the blood urea inasmuch as the laboratory technique of its calculation is very simple and accurate. We prefer it to the more laborious tests of the urea nitrogen or the other nitrogenous products of metabolism in the blood. The technique can be carried out by any physician in his office and takes no more than ten minutes. The method as used in our clinic is as follows: 5 c.c. of oxalated blood are added, drop by drop to

5 c.c. of 10 per cent trichloracetic acid in a centrifuge tube. The contents of the tube are thoroughly mixed and centrifuged for about five minutes. If a centrifuge is not available the mixture may be filtered, though this is less rapid and convenient, and may necessitate the use of more than 5 c.c. of blood to obtain 5 c.c. of filtrate. Five c.c. of the clear protein free filtrate are then titrated with 5 per cent bichloride of mercury. The mercury solution is added from a burette until a test drop of the mixture when added to a drop of saturated sodium carbonate on a porcelain spot plate gives a reddish-brown precipitate which appears in three seconds. It is important to mix the bichloride and filtrate very carefully and thoroughly before removing the test drop. A yellow precipitate may occur before the reddish brown, but the titration must be continued until the precipitate becomes reddish brown *promptly, within three seconds.* A minimum of 1.5 c.c. of mercury solution can be added before test drops are removed. As few test drops as possible should be removed.

*Example:* (No. of c.c. of bichloride sol. required) X 40 = Y

Y — 60 = (mgm. of bl. urea per 100 c.c. of blood).

(This is the blood urea and not the urea nitrogen.)

We consider the normal between 20 and 40 mgm. of urea per 100 c.c. of blood. There is this amount of variation caused, we must remember, by the difference in diet and fluid intake. In using this test as an indication of the functional capacity of a surgical kidney we are not so demanding that it reach the normal limits as we are that it become stablized. By this we mean the blood urea, say in a case with urinary obstruction, does not have to drop to 30 or 40 mgms., but it must become stabilized over a period of a week or two, even though that amount may be much higher than normal. For example: If a patient has been drained with a urethral catheter or a suprapubic tube for two or three weeks and a blood urea is taken every other day or so and this shows a drop from 150 to 60 mgms., and then remains at 60 mgms., say for a week or more. we consider that this patient, providing his other tests corroborate this, has reached the optimum of kidney function and that this slightly elevated blood urea is no contraindication to operation. As corroborative tests we use the non-protein nitrogen of the blood, the uric acid and the creatinin determinations. All these tests of retention are no direct index of the excretory ability of the kidney nor of the renal reserve, but rather show whether or not the kidney is able to excrete the normal amount of nitrogenous waste products in its present status. They do not tell us whether the kidney will be able to hold its own when an added strain is applied.

We believe that the measurement of creatinin as a functional test of the kidneys is poor, inasmuch as this product of metabolism is the last of the three—urea, uric acid, and creatinin—to be affected by renal insufficiency. It is known that very considerable diminution in renal function must occur before there is any rise in the blood creatinin level. Recently there has been some new work done on the measurement of blood creatinin after the injection of a certain amount of this substance into the blood stream. Tests are then taken to discover the amount and the rapidity of excretion in the urine of this product of metabolism. However, the whole technique, the giving, the collecting and the reading of this test, we believe is too complicated for practical usage. About 1914 Ambard was working on the interrelationship of the amount of urea in the blood and in the urine. He figured out a formula which was called "Ambard's Constant," or the ureo-secretory constant. This was the measurement of the urea excreting power of the kidneys. However, this test must be carried out very accurately and precisely in order for it to be of real value and the possibility of error is too great. The French urologists have compared this method very carefully with that of the blood urea and the phthalein tests and have discarded it almost entirely. Recently in this country Van Slyke has brought out the "Urea Clearance Test" which is very similar to "Ambard's Constant." It is recorded by measuring the number of c.c. of blood per minute cleared of urea by renal excretion and is expressed: $\frac{U \text{ (Urine Urea)}}{B \text{ (Blood Urea)}} \sqrt{\text{Vol.}}$ Van Slyke has worked with this test for over ten years; trying it out in various kinds of nephritis and comparing it with the phthalein excretion. The urea clearance test shows the relationship between blood urea, urine urea and urine volume. If the patient is putting out less than 2 c.c.

of urine per minute, the urea output increases in proportion to the square root of the urine volume but when the volume reaches this amount, which is the low limit of normal output, the urea excretion has attained its maximum and is unaffected by further increase of volume output. He found out also that in patients with slightly diminishing renal function the blood urea clearance shows evidence of disease before a diminution in phthalein secretion is noticeable. He says that only after the urea clearance falls as low as 20 per cent of the normal, do they find abnormal phthalein and retention tests. However, the fault in his work, we believe, is that he took merely the two-hour phthalein excretion rather than the fifteen-minute phthalein collections. This is a very important point and, as we shall show later on, is particularly essential in medical cases such as those with which he dealt. We know that there is always evidence of renal disease in the phthalein excretion when collected every fifteen or thirty minutes before there is elevation in the nitrogenous waste products of the blood. But he also found out that, conversely, in the improvement of renal function the phthalein test shows the change earlier than the urea clearance test.

There is one other test of retention or rather of urine examination which should be mentioned and that is cryoscopy or the determination of the freezing point of urine. A few years ago this was thought to be of great importance and that it might replace other renal function tests. However, the technique of the determination of this factor was too complicated and not sufficiently accurate to make it of practical use.

The second large group of renal function tests is one of excretion. A known amount of substance is injected into the blood stream and the amount excreted in the urine is measured. In the last twenty years there have been many of these substances brought forth, tested, and most of them have been discarded as quickly as they have been used. Among these are potassium iodide, lactose, diastase, rosanilin, methylene blue and phloridzin. Rosanilin was a good drug in many ways but it took about twenty hours for a complete elimination. Phloridzin was thought to be, for a time, a measure of glomerular function but it is now known that it does not stimulate the kidney to synthesize sugar, but rather increases the permeability of the kidney for the excretion of sugar. This test has now been found to be unreliable and unsatisfactory as a renal function test and has been completely discarded. Methylene blue was very popular about 1897 when Achard and Castaigne first demonstrated its application in renal excretory tests. However, its faults far overbalanced its advantages. Its exact determination is very difficult as only approximately 50 per cent of the drug injected is excreted in the urine. The color of the dye is readily influenced by the color of the urine; the dye undergoes chemical changes in the body and is sometimes completely destroyed by the body tissues. The excretion of methylene blue lasts over far too long a period, sometimes being present in the urine as long as four or five days after injection. However, in diseased kidneys its appearance is delayed and excretion retarded and diminished similar to other drugs. Methylene blue, however, is cumbersome and very rough as a test of renal function and has been practically universally discarded.

The two drugs of most common usage among physicians at the present day are indigocarmin and phenosulphonephthalein. The former was experimented with by Heidenhein in 1900. He worked on the physiology of the kidneys; and in 1903 Voelcker and Joseph used it clinically in estimating the total and comparative renal function. Apparently, only about 25 per cent of this is excreted by the kidneys and the total excretion is not completed until twenty-four hours after the injection. Colorometrically it cannot be read very accurately because it is a suspension and not a solution. However, there has been considerable usage of this drug both in this country and abroad, particularly, for differential renal function. Its method of injection is either intramuscular or intravenous. Wildboltz of the University of Bern told us that he preferred the intramuscular method because he feels that by this method he can better visualize slight impairment in one kidney or the other. If the dye is given intravenously, he says the kidney receives such a large amount all at once that even a moderately diseased kidney can put out some of the dye and usually a good deal of it immediately; while, if the dye is given intramuscularly, the kidneys receive the dye more slowly and in less concentration and, therefore, its appearance may be

retarded in one or the other kidney and its diminished excretion from the diseased kidney more easily detected. Therefore, he thinks that a slightly diseased kidney would be more readily diagnosed by the intramuscular than it would be by the intravenous method. Others in this country believe that the intravenous administration is the more accurate. Thomas in Philadelphia has written a good deal on this subject and brought out the "index of elimination" in which he compared the first twenty-minute period to the third twenty-minute period, and concluded that if the index was over one the patient was in a satisfactory state for operation, while if it was less than one the patient's renal function was not good enough for an operative procedure. He also found that in the normal kidney five times as much of the dye was excreted in the first twenty minutes than in the third twenty-minute period; and that the third period in the diseased kidney often showed a greater excretion than the first. He concluded that the three important factors in using this dye as a function test were: (1) the appearance time; (2) the total output; and (3) the index of elimination. However, we feel that the main advantage of this dye is not as an accurate renal function test so much as it is a great help in chromocystoscopy. For instance, in cases of tuberculosis of the bladder or of a very severe cystitis, where the ureteral orifices cannot be seen, after the dye is given and one observes the orifices through the cystoscope, they can very often be picked up in this manner; but as a test of total renal function, we know of no one who claims this drug to be as efficient as phthalein. B. A. Thomas, who was probably its most ardent advocate, said "the index of elimination of phthalein and the blood urea nitrogen has served well and faithfully. There are none better or more reliable."

The invention, pharmacology, and clinical application of phenosulphonephthalein makes a most interesting story. Ira Remson in 1885 described the drug. However, nothing was done with it then and it was laid on the shelf. In 1909 Abel and Rowntree, looking for a drug suitable for renal function tests, experimented with phthalein and pointed out its excellent properties. In 1910 Geraghty brought forth a beautiful piece of work showing the clinical application of phenosulphonephthalein as a renal function test. An interesting note here is that Remson by this time was President of the University in which all the work on this drug had been done. He had noticed that his mental faculties were not as clear as they had been and for this reason resigned from his important office. He then came into the hospital and through the application of phthalein, the same drug which he had discovered twenty-five years before, it was found that his renal function was markedly impaired and that he was in a state of mild uremia. This had been caused by urinary obstruction; when this was relieved, he again became as alert mentally as he had been years before. It is said that he then regretted exceedingly having given up his presidency. The story of the first clinical application of phthalein is also rather interesting. The first human case upon which the phthalein test was employed was No. 1932 of the Brady Urological Institute. A few days before this test was applied, to quote Dr. Young, "Dr. Rowntree had presented to the Interurban Surgical Society experimental work on a dog in which he had ligated one ureter and brought it out in the loin. Following this he had introduced uranium nitrate into the renal artery to produce an experimental nephritis. Phenosulphonephthalein was subsequently injected into the dog and a study of the divided urines showed that more of the dye was excreted through the kidney which had been operated upon than through the unoperated kidney. From this Dr. Rowntree deducted that phenosulphonephthalein was eliminated more rapidly by a diseased kidney than by a healthy one. He asserted that he thought he produced an experimental nephritis by the injection of uranium nitrate; this kidney excreted more of the phenosulphonephthalein than the other, presumably normal side. Following this demonstration I talked to Dr. Rowntree. I told him I had on the ward a patient who presented exactly the same condition as his operated dog, i. e., the right ureter was blocked and all the urine was coming out through the right loin, following the operation upon the right kidney. I, therefore, proposed that phenosulphonephthalein be injected into this patient. Dr. Rowntree came to Ward C, and gave the patient, in my presence, an injection into the right arm of 1 c.c. of 6/10 per cent solution of phenosulphonephthalein. Urine was collected from the fistula in the right side and by catheter from

the bladder. I do not remember for what length of time it was collected, but on the following day Dr. Rowntree informed me that this case confirmed absolutely his experimental work on the dog, i. e., more phthalein was excreted from the fistula in the right side than through the left ureter which opened into the bladder from which the urine was collected by a catheter. Within a few days after this experiment the patient developed a fever and marked pain and swelling in the left side. A large mass was easily palpable in the region of the left kidney and the patient became rapidly uremic. By a hasty operation I exposed the left kidney and found it was a mere shell and filled with pus. It is evident, therefore, that at the time the experiment with the phthalein was carried out by Dr. Rowntree the left kidney was really the bad kidney and the phthalein test simply showed that a bad kidney excretes less than a comparatively good kidney. Other patients in which the test was tried after this confirmed our findings in this case and it was promptly demonstrated that phthalein was eliminated more rapidly and in larger amount by a good kidney than a bad one. "The deduction which one draws is that the intra-arterial injection of uranium which Dr. Rowntree carried out produced congestion and probably hyperemia of the kidney with increase in its functional capacity. Perhaps nephritis with impairment of function might have come on later or it is quite possible that the dosage of uranium nitrate used was too low to produce nephritis at the time Dr. Rowntree made the phthalein test."

It is now known that 95 per cent of the injected phthalein is excreted by the kidneys and that it is not taken up or destroyed by other body tissues; not until there is such profound cyanosis that it endangers the life of the patient, do the tissues destroy this drug. Furthermore, 75 per cent is excreted within the first one and one-half hours. It has been noticed also that in edematous patients the extent to which the phthalein is retained in the tissues is influenced by the degree of acidosis. When the tissues are rendered alkaline they readily liberate it. Ether or gas-oxygen anesthesia are known to slightly diminish the secretion of phthalein.

Since the introduction of phenosulphonephthalein as a test of renal function considerable physiological and clinical work has been done with it. The apparent specificity of the kidneys for secreting this drug is most remarkable. They seem to be able to pick the phthalein from the blood and concentrate it even when there is little urine being secreted. In the physiology of the kidneys, the glomerular function is thought to be one of secretion alone while the tubular function is one of reabsorption into the blood and, in addition to this, also some secretion. Marshall and others have shown that phthalein is secreted by the convoluted tubules of the kidney and not by the glomeruli. Experiments based on the local injury to the tubules by means of poisons, such as mercury bichloride, convince us that the tubules are the main seat of phthalein elimination while in the vascular type produced by arsenic, the injury here is primarily glomerular and there is no change in the phthalein secretion at the beginning. Microscopic localization of the drug in the cells of the convoluted tubules in the non-secretory kidney leaves little doubt but that this is the specific part of the kidney which secretes the dye.

We now consider the clinical applications of phenosulphonephthalein. This test gives alone the excretory capacity of the kidneys but does not tell us whether this capacity is sufficient to meet the requirements of elimination in a particular individual. However, when this test is combined with a retention test such as the blood urea, we have then an estimate of the reserve power of the kidneys and we know also whether or not the function of the kidneys at the present time is sufficient for the nitrogenous elimination of that particular patient. We realize, however, that it is not altogether an ideal renal function test; it does not give us the type of kidney lesion present and may give us a relatively erroneous impression of some patient's condition. If the test is done as is now the general custom of collecting two hourly specimens, often it is apparent, clinically, that the patient has improved markedly, as in an obstruction case on catheter drainage, and yet the two-hour phthalein output may not have improved appreciably; or one patient with a two-hour phthalein excretion of 40 per cent may have a beautifully smooth and uneventful convalescence, while another with a better total output may develop post-operative uremia and die. The experienced surgeon has learned to supplement the phthalein test with careful clinical observation and blood studies

so as to avoid just such experiences. The reliability of the phthalein test has recently been emphasized by Young in an article in which he shows many pathological kidneys and along with them their phthalein excretion curves. The correspondence is surprisingly accurate. The internist sees many cases of acute nephritis, chronic parenchymatous nephritis and cardio-vascular hypertensive renal disease that have a normal two-hour total phthalein output even when the disease may have reached a fairly advanced stage. This has caused him to look with doubt and uncertainty upon the results of this test, while in reality the truth was there before him if he had but refined his technique. There is, therefore, a real need for a more reliable method of determining the type and extent of renal lesions and a more accurate measurement of the reserve power of the kidneys.

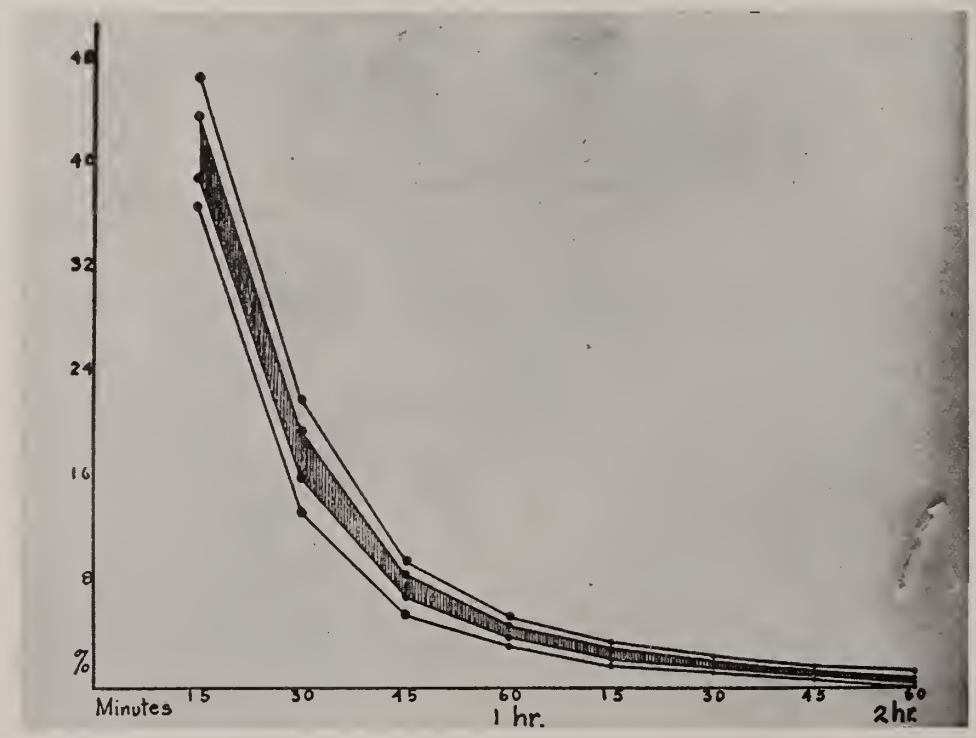



Chart 1.—The variations of the normal fifteen-minute interval curve of phthalein elimination as determined by 44 tests on 23 normal individuals (Shaw).

The clinical problem involved in the phthalein test for renal excretion may not be alone whether the kidney itself is capable of excreting it, but rather whether the kidney has a chance to excrete it. For instance, a patient with cardiac failure or with edema of the tissues for any reason whatever might have a delayed appearance time and diminished output because there is delayed absorption of the drug when it is given subcutaneously or intramuscularly. It is important, therefore, to consider the three methods of administration. Of these three techniques, subcutaneous, intramuscular, and intravenous injection, the last is much the preferable for practically all cases where merely the renal function is desired. However, if a more complete understanding of the condition of the body tissues is desired, the intramuscular or subcutaneous injection is preferable. In cases of cardiac insufficiency the difference in the results between the intravenous and the intramuscular may be a fair index of the comparative degree of cardiac and renal impairment. That is, greater delay in excreting means greater cardiac insufficiency. In cases of chronic passive congestion of the kidneys there is a slight decrease in the phthalein output even when there is no nephritis present, and as the cardiac condition improves the phthalein also increases in amount. However, if there is true kidney damage, as the circulation improves the phthalein does not correspondingly rise.

As we have said, the reason for the suspicious

view internists have of the reliability of the phthalein test in acute, subacute and chronic nephritis is based probably on their personal experiences with phthalein two-hour collections. It has been found that for their cases a more careful method of collection is essential. Shaw in 1924 worked out the normal curve of phthalein excretion. He used the House Officers as subjects and had them collect their specimens every five minutes. In a second

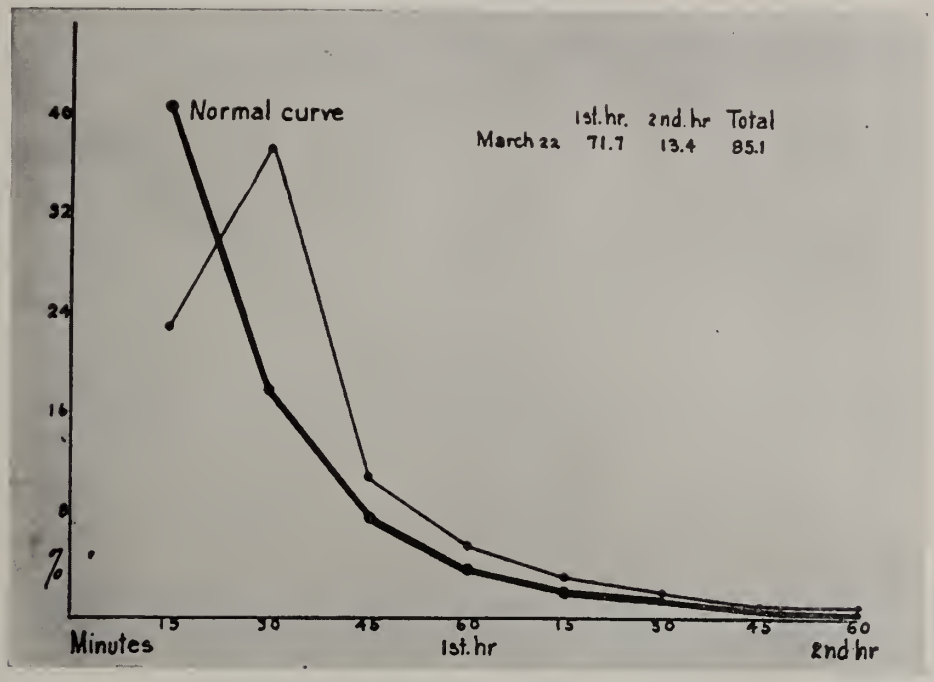



Chart 2.—Curve of phthalein elimination in a case of subacute nephritis. The normal curve is shown for comparison. The other renal function tests in this case were negative (Shaw).

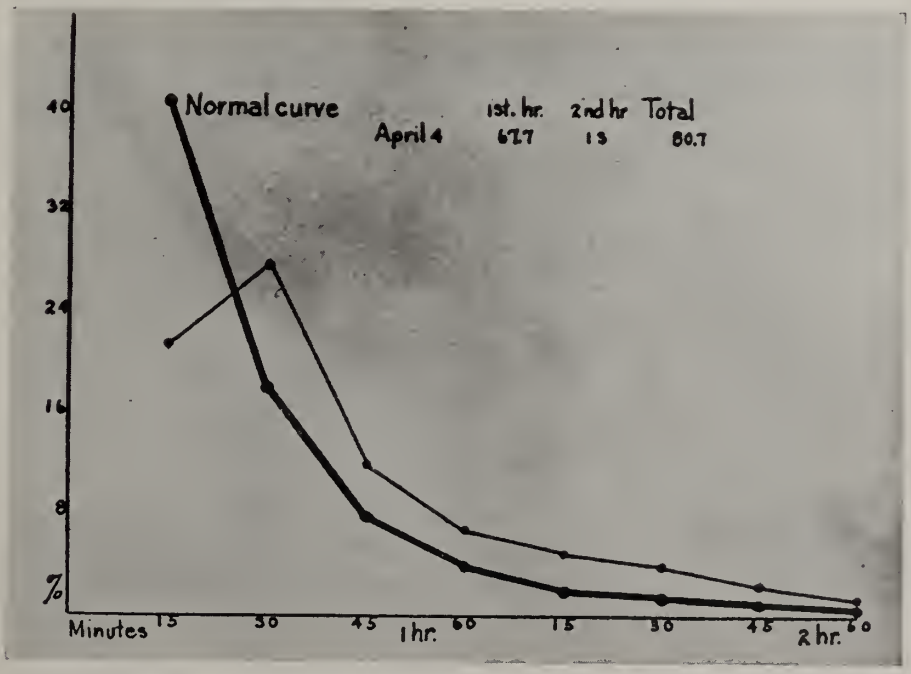



Chart 3.—Curve of phthalein elimination in a case of chronic parenchymatous nephritis. The normal curve is shown for comparison. The other renal function tests were negative in this case (Shaw).

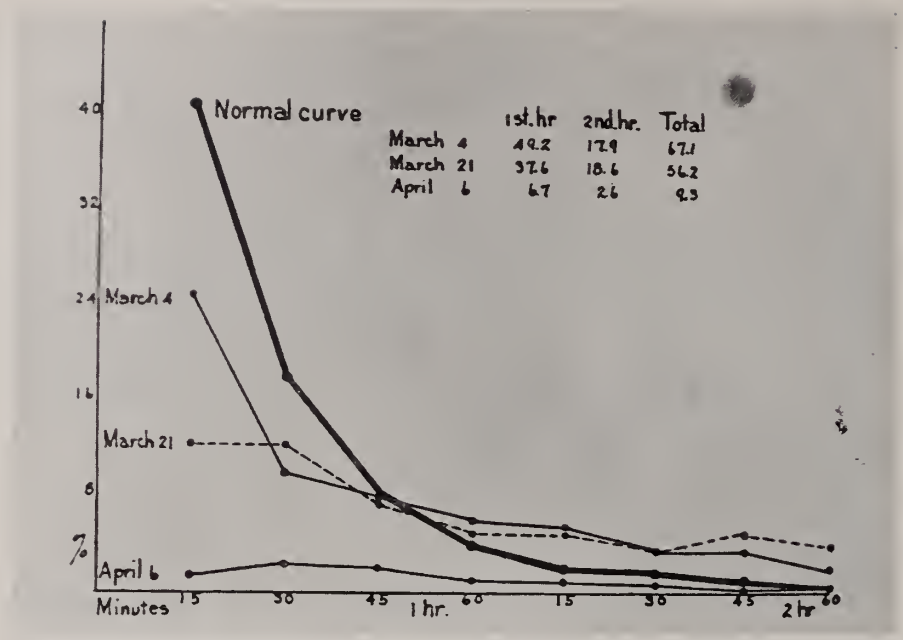



Chart 4.—Repeated curves of phthalein elimination in a case of cardiovascular hypertensive renal disease (Shaw). The normal curve is shown for comparison.

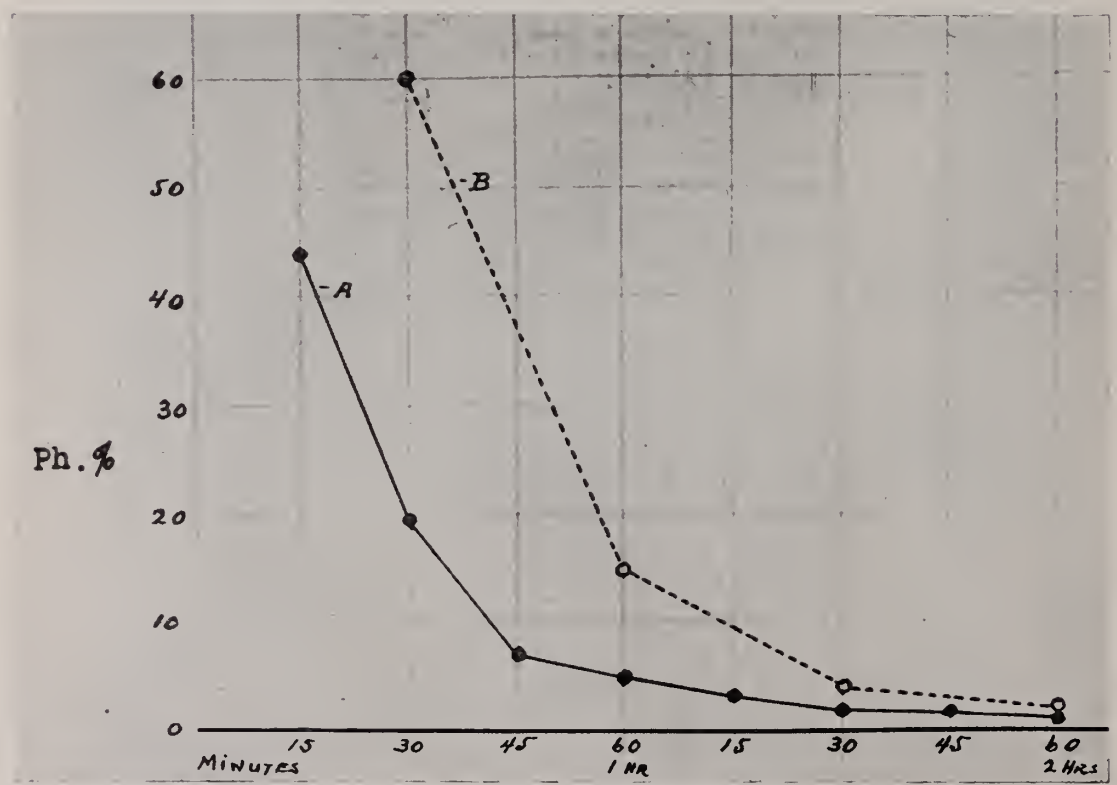



Chart 5.—Curve A is the phthalein excretion of a normal individual with collections every 15 minutes. Curve B is one of the same individual with collections every 30 minutes. It is evident that the character of these two curves is essentially the same.

series of cases he did forty-four tests on twenty-three normal individuals, taking collections every fifteen minutes. He found that this longer period gave the same characteristic curve as the five-minute period collections. Chart No. 1 shows the slight variation in these curves and gives the composite normal curve of phthalein excretion. It is seen that the greater part of the drug is excreted in the first fifteen minutes and that it drops off rapidly in the second and third fifteen-minute periods, so that by the end of an hour the excretion is at a very low level. It was found by clinical application that fifteen-minute collections were necessary for accurate determinations of renal function in medical cases, such as subacute or chronic nephritis and cardiovascular hypertensive renal disease. In a subacute nephritis, as shown in Chart No. 2, if collections had been made at the one and two-hour periods, the internist would have been justified in looking with disdain on this renal function test, for the patient had a 71.7 per cent output in the first hour and a two-hour total of 85 per cent—a very good excretion. However, if collections had been made every fifteen minutes, it becomes quite evident that the excretion is not normal, as shown by the curve in contrast to the normal one inserted for comparison. Here, the greatest output is in the second fifteen-minute period and not in the first. The same is true of a case of chronic parenchymatous nephritis. The hour excretion is 67.7 per cent and the two-hour total 80 per cent. However, the abnormality in this curve is shown in contrast to the normal. Then in a case of cardiovascular hypertensive renal disease, we see a first hour collection of 49.2 per cent and a two-hour total output at 67 per cent. Here, too, the curve is far below the normal in the first two fifteen-minute periods and then crosses the normal to raise the output in the second hour collection. This chart shows, too, the lowering or flattening of the curve as the renal function becomes worse, until the third curve shows merely a flat line which is evidence of very serious renal damage.

As we have said, Shaw found that fifteen-

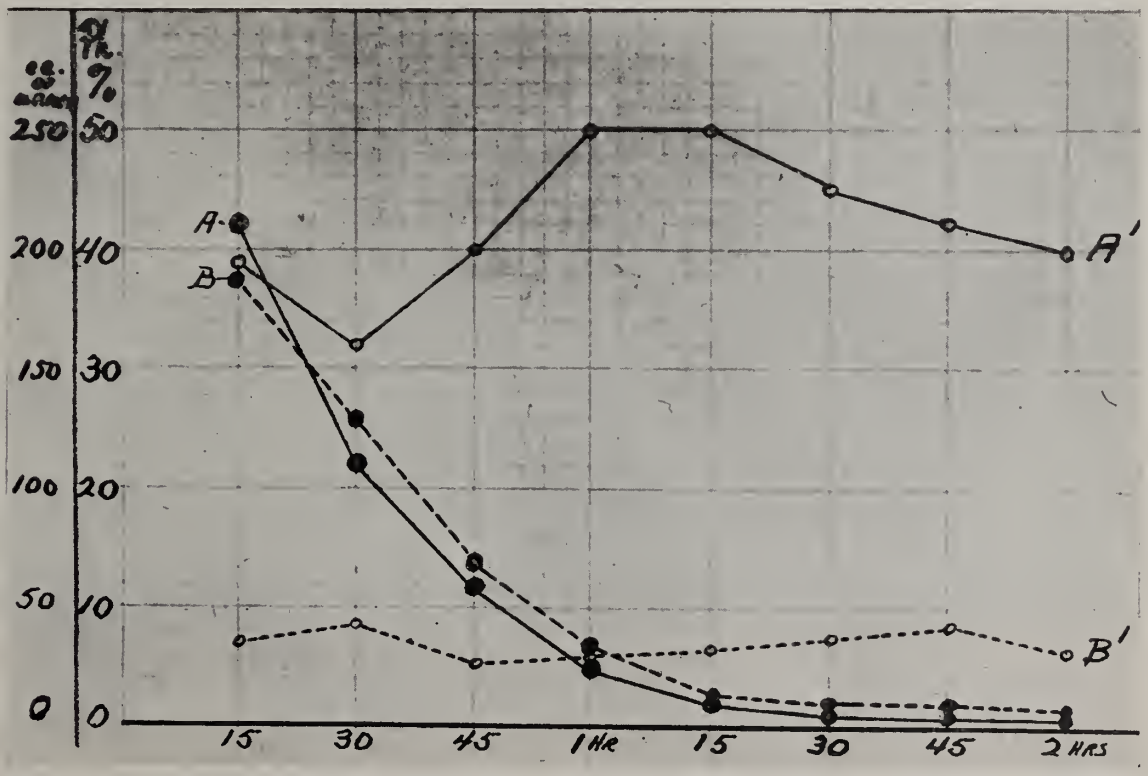
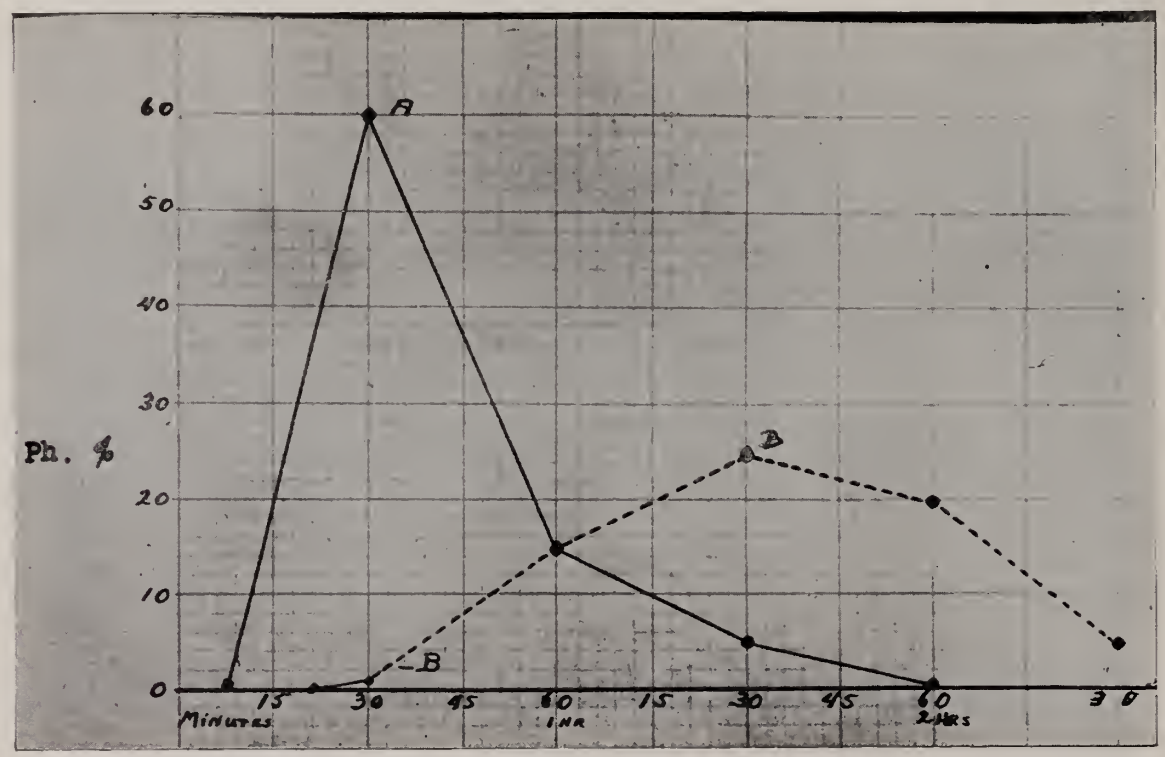



Chart 6.—Curve A shows the phthalein output of a person who is voiding large quantities of urine, between 200 and 250 c.c., every fifteen minutes as shown in Curve A'.
Curve B is one of a patient with limited fluid output, voiding less than 50 c.c. every 15 minutes, as shown in curve B'. It is quite evident that these two curves are almost exactly the same, having the same character and the same percentage of phthalein excretion. This shows that the amount of phthalein excreted is not dependent upon the amount of urine excretion, providing the patient is putting out at least 40 c.c. every 15 minutes. So that the general opinion that patients must have water forced in large quantities in order to get a good phthalein execretion is erroneous.

minute collections gave the same type of curve as five-minute periods, just so we have found that thirty-minute periods of collection give the same characteristic curves with the greatest part by far of the phthalein being excreted in the first half hour period. We see in Chart No. 5 that the two curves are practically parallel. Because of the impracticability of taking fifteen-minute collections clinically, we have been taking our specimens every thirty minutes and find that it is perfectly satisfactory in our cases of urinary obstruction or other so-called surgical kidneys.

As has been pointed out before, we have found that the percentage output of phthalein is not dependent upon the quantity of urine excreted. In Chart No. 6, this normal individual has practically the same phthalein curve when he is excreting over 200 c.c. of urine every fifteen minutes as he has when he is putting out only 40 c.c. every fifteen minutes. We feel, therefore, that as long as each kidney is putting out 1 c.c. per minute, or from both kidneys 60 c.c. per half hour period, the phthalein excretion is accurate. As a matter of practice, however, we usually see to it that the output is more than that so as to cut down any probability of error. A normal individual will excrete 60 per cent of phthalein or 1 per cent per minute from each kidney, for the first half hour after injection.

The important factors in interpreting the phthalein curves are: the appearance time, the amount of phthalein excreted in the first half hour and its relation to that excreted in the second, third and fourth half hour periods. Reading the curves with these points in mind gives us at a glance an accurate idea of the patient's renal function and his renal reserve. Chart No. 7 shows a normal curve as con-

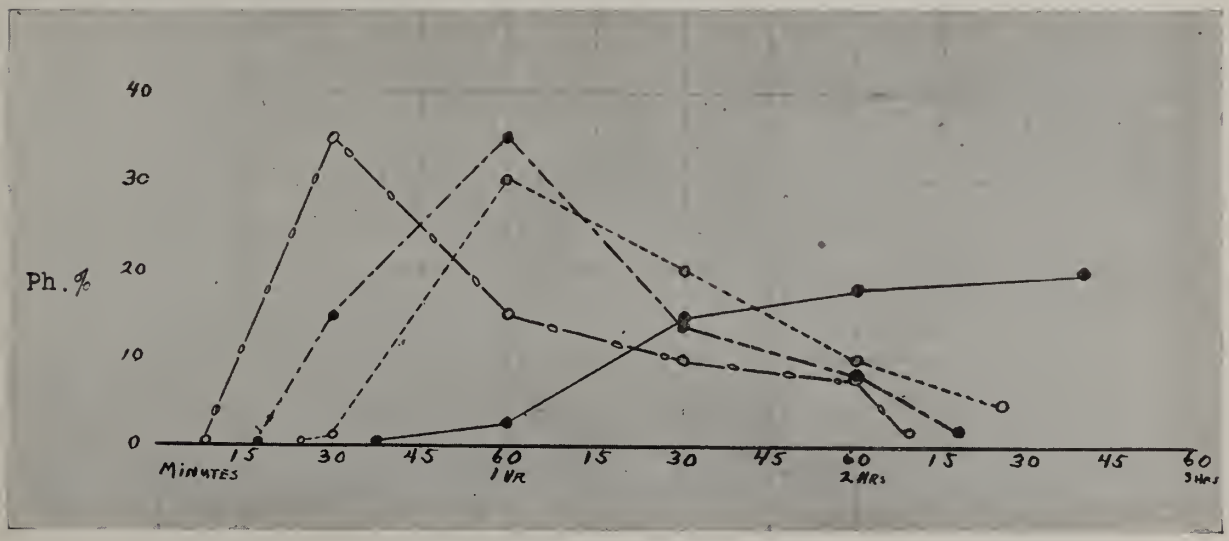



| APPROXIMATE TIME | ½ Hour | 1 Hour | 1½ Hours | 2 Hours | 2+ Hours | Total |
|---|---|---|---|---|---|---|
| A— 5 minutes | 60 | 15 | 5 | Trace | ..... | 80 |
| B—20 minutes | Trace | 15 | 25 | 20 | 5 | 65 |

Chart 7.—Curve A. Normal phthalein execretion curve is shown in contrast to Curve B, a case of urinary obstruction. In Curve B we see the delayed appearance time with the curve rising slowly to its apex at one and a half hours. In the normal curve this peak is seen in the first thirty minutes. Curve B in character is just the opposite of Curve A which rises abruptly in the first thirty minutes. Curve B is seen to rise slowly and fall slowly so that at the end of 2 hours there is as much as 20 per cent still excreted. The two-hour totals, however, for these two curves vary only 15 points, so from the totals alone one would not obtain a correct impression of patient B as contrasted with patient A.

trasted with one that we see very often in cases with chronic urinary obstruction. It is seen that the appearance time in the abnormal curve is twenty minutes instead of five minutes. In the first half hour only 15 per cent is excreted instead of 60 per cent as in Curve A. And after one hour the abnormal curve is rising while the normal is falling rapidly. Then by the one and one-half hour period Curve B is at its peak 25 per cent, while the normal curve has fallen to only 5 per cent. In other words, the two curves are exactly the opposite in architecture, one falling rapidly from its peak at thirty minutes and the other rising slowly to its peak at one and one-half hours. This case which we see so often in chronic urinary obstruction differs from that seen in subacute or chronic nephritis as is shown in Charts No. 2, No. 3, and No. 4 where the appearance time was about normal and the greatest amount of phthalein put out in the first half hour period, but markedly diminished and the curve tending to take on a flat line as the condition becomes worse.

The following charts are presented to show the graphic representation of the phthalein excretion in cases of chronic urinary retention. In these we see the changing of the character of the curve as the patient's renal condition improves. The curve is seen to approach nearer the normal standard, i. e., the greatest amount of drug being put out in the first half hour period and followed by a rapid fall. In addition we see the appearance time of excretion moving toward the point of injection. In Chart No. 8 we see a very poor curve of excretion with an appearance time of thirty-eight minutes and the curve taking on a form exactly opposite to the normal, so that at the end of two hours and forty-five minutes when there should normally be no phthalein excreted at all we have the greatest amount, or 20 per cent output. This curve shows also that while the total two-hour collections for curves three and four are about the same, actually curve four shows a marked improvement in renal function as evidenced by the change of the apex of the curve from the second to the first half hour period. The same is observed in Chart 9 in which the last three curves show marked improvement, their appearance times moving from ten to six minutes and the peak of the

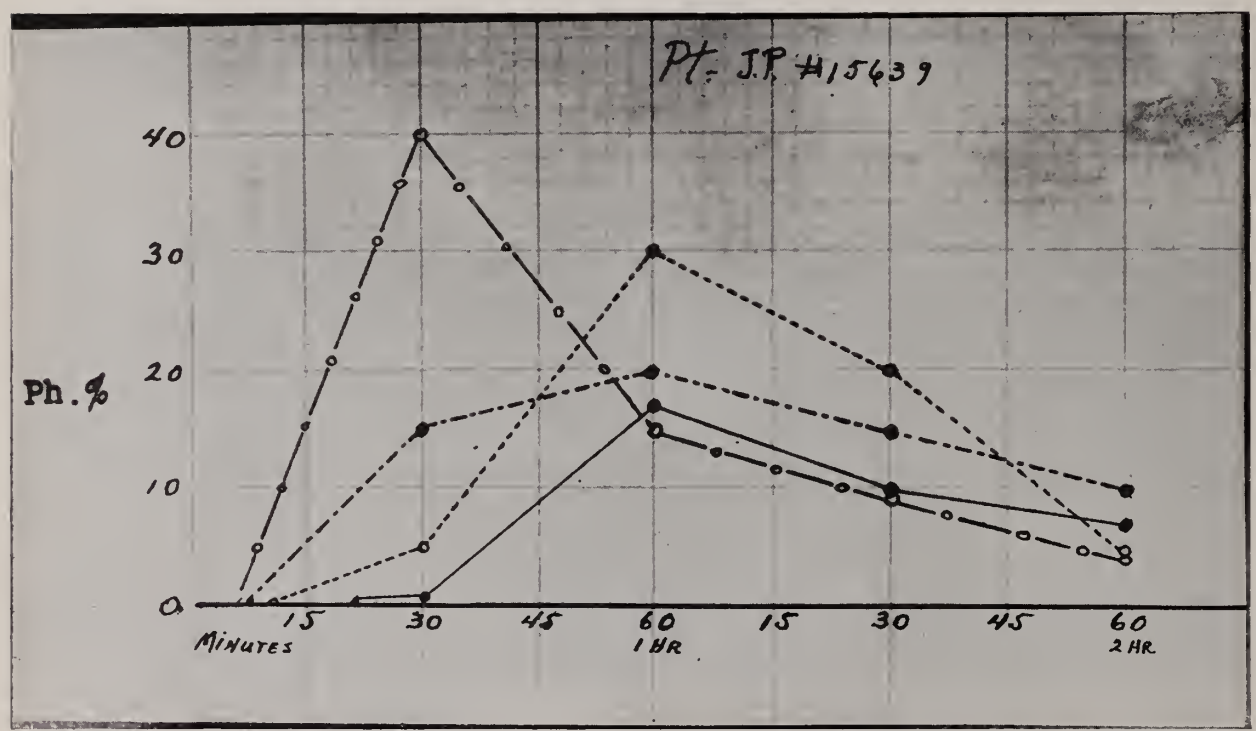



| DATE | Approximate Time, Minutes | ½ Hour | 1 Hour | 1½ Hours | 2 Hours | 2+ Hours | Total |
|---|---|---|---|---|---|---|---|
| 10/23/28 (1) | 38 | 0 | 3 | 15 | 18 | 20 | 56 |
| 10/25/28 (2) | 27 | Trace | 30 | 20 | 10 | 5 | 65 |
| 11/ 3/28 (3) | 17 | 15 | 35 | 13 | 8 | 2 | 73 |
| 11/ 6/28 (4) | 8 | 35 | 15 | 10 | 8 | 2 | 70 |

Chart 8.—These curves are of a patient with urinary obstruction, and show the marked improvement in renal function from Curve 1 and Curve 2. The appearance time has shortened and the apex of the curve has changed from two and a half hours to one hour. There is still more improvement in Curve 4, the apex now being in the first half hour instead of the second. Curves 3 and 4 are equal for the first hour total but, as shown graphically, Curve 1 is very much better than Curve 2, since the apex has moved from the second to the first half hour period.

excretion curve from the second to the first half hour period. However, their two-hour totals are about the same. This is most important from a surgical standpoint, for we are led astray by a good total two-hour phthalein. That patient may, as a matter of fact, be right on the precipice of uremia and need only a slight jar to throw him over. We have very little warning of the impending danger from a two-hour or one-hour collection of phthalein. On the other hand, a thirty-minute collection curve gives us just such information, and we can therefore continue our preoperative care until such kidneys have reached their optimum functional capacity. We can then operate without fearing post-operative uremia. This is probably the greatest factor in lowering the operative mortality in prostatectomies of thirty years ago from 40 per cent to 4 per cent. Our pre-operative care now is very careful and painstaking. The patient is not subjected to operation until his renal function is at its optimum and within a fair range of safety.

The last three Charts, Nos. 10, 11, and 12, show the blood urea determinations which we always make along with our phthalein collections. As has been stated before, it is the combination of these two tests which gives us the best habit of diagnosis of renal function at our command. These curves show the rapid fall of the blood urea as soon as drainage is established, and as the renal function improves a stable level in blood urea is reached, usually within normal boundaries. But let me remind you again that it is not necessary for the level to be absolutely within normal limits, just so it has become stable at a moderately low level. Chart No. 11 emphasizes again the importance




| DATE | Approximate Time, Minutes | ½ Hour | 1 Hour | 1½ Hours | 2 Hours | Total |
|---|---|---|---|---|---|---|
| 6/20/31 (1) | 20 | Trace | 17 | 10 | 7 | 34 |
| 7/10/31 (2) | 10 | 5 | 30 | 20 | 5 | 60 |
| 7/20/31 (3) | 8 | 15 | 20 | 15 | 10 | 60 |
| 7/28/31 (4) | 6 | 40 | 15 | 10 | 5 | 70 |

Chart 9.—These curves are also of a patient with urinary obstruction. The four curves show the general improvement in this patient's renal function as measured by the phthalein output while the patient was on continuous catheter drainage. The last three curves show very definite improvement in functional capacity of the kidneys even though their two-hour totals are almost the same.

of the half hour collections. We see very little change at all in the two-hour totals of the last three curves of this chart. But by these curves it is quite evident that the kidneys have improved in renal function from a condition which would not permit operation to one of fairly satisfactory prognosis. In Chart No. 12 we see a very remarkable improvement in renal capacity, showing steady advancement of the appearance time from two hours to ten minutes and each succeeding curve slowly approaching the normal excretion type. This patient was watched carefully and seen to pass from an entirely inoperable condition to a fairly good operative risk, as shown by the phthalein curves. The last curve, taken after operation and the removal of the prostatic obstruction, shows the best curve of all. This curve now approaches most nearly the normal type, the greater amount of phthalein being put out in the first half hour and then dropping off rather abruptly to the second, third and fourth half hour periods. The appearance time also has moved up to almost within normal limits.

When one keeps such careful and frequent phthalein charts twice each week on pre-operative urinary obstructive patients, one can follow very closely and intelligently the renal function improvement in all these cases. These show graphically quite plainly whether the patient is improving as he should, and whether or not his condition will be sufficiently satisfactory to permit operative intervention. So, by a combination of the blood urea and frequent phthalein determinations made as shown here, we are able to get the best possible intelligent understanding of the patient's renal function and his renal reserve.

It would not be just to omit a word in re-

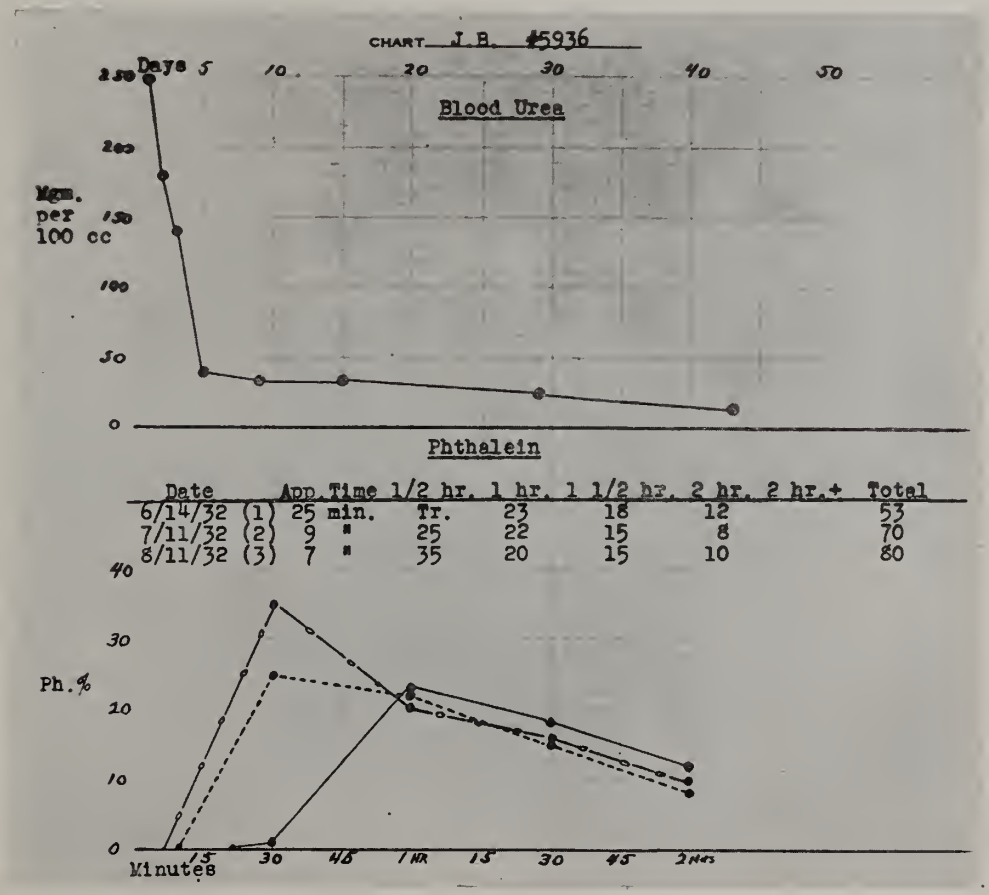



Chart 10.—This shows the improvement in renal function as measured by blood urea and also phthalein excretion when the patient was on catheter drainage. Blood urea curve shows rapid drop from 250 mgm. to 40 in 5 days.
Phthalein curves show improvement, along with the drop in blood urea, with the shortening of appearance time and the moving of the apex of the curve from the second to the first half hour.

gard to a new urological diagnostic procedure which has been heralded recently throughout the medical world. We speak of intravenous urography. We had the good fortune of being with Professor Von Lichtenberg, in Berlin, three years ago when he was applying this test clinically for the first time. He does not claim that it is a good test of renal function, but rather discourages its use as such. However, there are cases when undoubtedly it does give us some index of the excretory function of the kidneys. But it is not accurate or delicate enough to supplant our present tests. For instance, we must take into consideration the anatomical and pathological condition of the whole urinary tract before one may draw conclusions. If there is obstruction present anywhere along the path, the accumulated iodide will cast an intensified shadow. A kidney with poor function plus obstruction to that side in the hour plate may give as good a picture as a good unobstructed kidney. One must, of course, take into consideration also the relative appearance times of the shadows, etc. There are, however, cases undoubtedly where gross differences are noted in the shadows of the two kidneys when this will be a distinct aid in deciding the diseased organ or where we can obtain a rough idea of the functional capacity of the kidneys.

This is shown rather plainly in the three urograms which are inserted. Urogram No. 1 is of a normal individual showing both kidney pelves filled with Skiodan five minutes after injection. This shows shadows of normal intensity of the kidneys, ureters and bladder. Since the Skiodan has gone through with this much intensity in five minutes, one would gather that both kidneys have very good function. Urogram No. 2 is of a boy with sus-

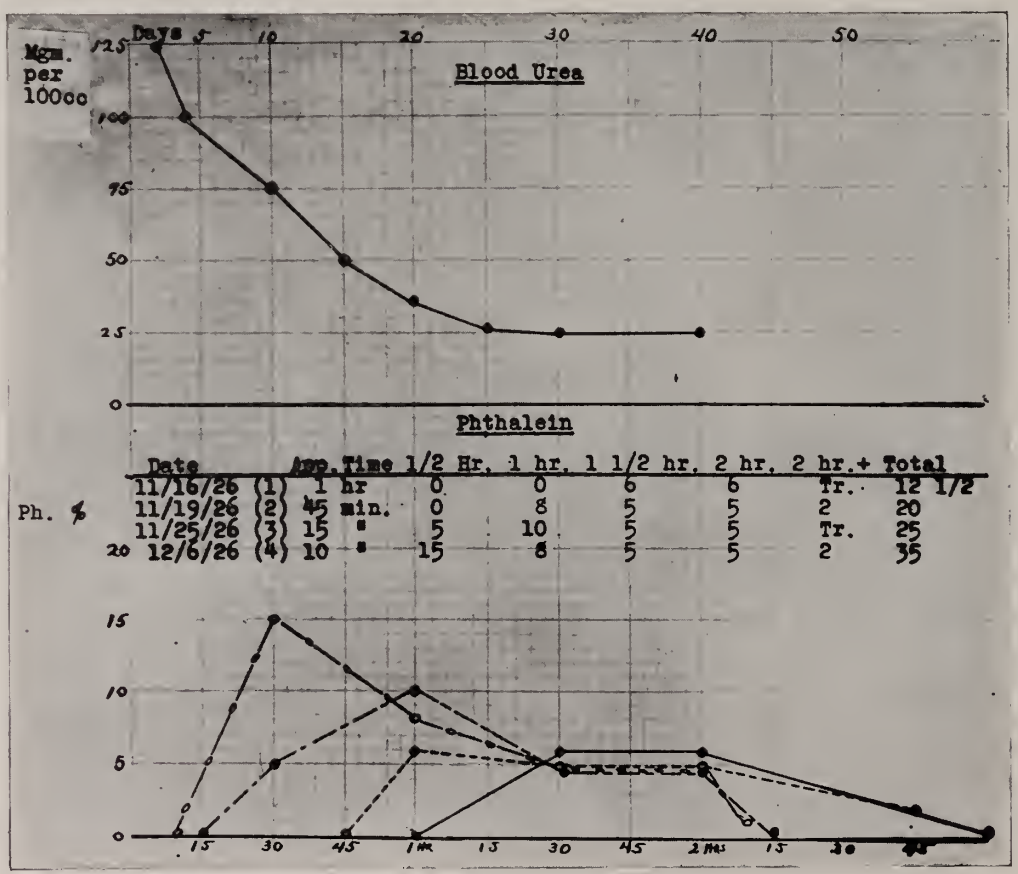
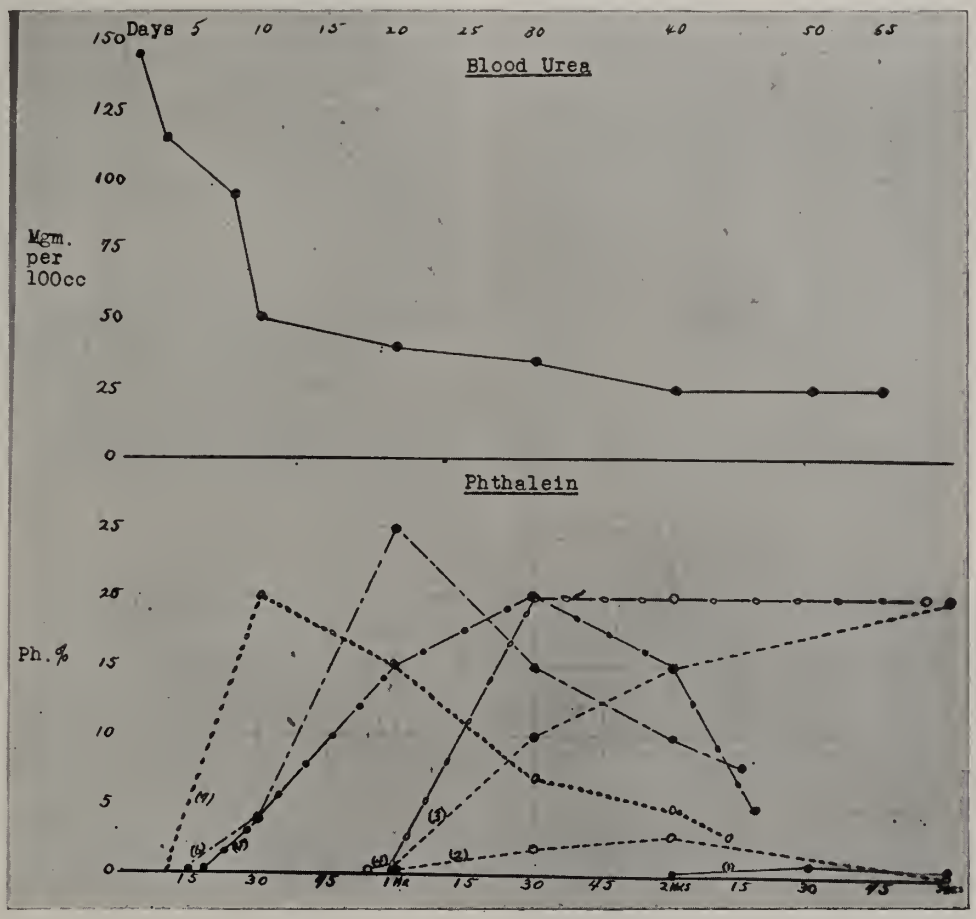



Chart 11.—Blood urea and phthalein curves of a patient with urinary obstruction. Blood urea curve shows gradual drop from 125 mgm. to 25 mgm. in 25 days, and then remaining at this level.
Phthalein curves show very poor excretion in the first curve and gradual improvement through curves 2, 3, and 4, with the appearance time shortening from one hour to 10 minutes, and with no excretion in the first hour in the first curve to 15 per cent the first half hour in the fourth curve. Note also that in the last three curves there is only a difference of 15 per cent in their total two-hour collections, but when these collections are charted every half hour one sees readily the marked improvement in the patient's renal function.

pected tuberculosis of the right kidney. This picture, taken five minutes after injection, shows the left kidney pelvis well filled and the shadow of normal intensity, while, on the right side, the kidney pelvis is very indefinitely seen and of not nearly the intensity shown on the left. One would gather that the function, therefore, of the right was not as good as that of the left. This was checked by a differential phthalein test and the appearance time was four minutes on the left, with 20 per cent the first fifteen minutes, and six minutes on the right with 6 per cent the first fifteen minutes. Urogram No. 3 is one of a patient with left-sided renal symptoms in whom it was impossible to catheterize the left




| DATE | Approximate Time, Minutes | ½ Hour | 1 Hour | 1½ Hours | 2 Hours | 2+ Hours | Total |
|---|---|---|---|---|---|---|---|
| 10/ 5/28 (1) | 2 hours | 0 | 0 | 0 | Trace | Trace | Trace |
| 10/10/28 (2) | 1 hour | 0 | 0 | 2 | 3 | 0 | 5 |
| 10/17/28 (3) | 1 hour | 0 | 0 | 10 | 15 | 20 | 45 |
| 10/26/28 (4) | 50 | 0 | Trace | 20 | 20 | 20 | 60 |
| 11/15/28 (5) | 17 | 4 | 15 | 20 | 15 | 5 | 59 |
| 11/28/28 (6) | 15 | 4 | 25 | 15 | 10 | 8 | 62 |
| 1/12/29 (7) | 10 | 20 | 15 | 7 | 5 | 3 | 50 |

Chart 12.—Curves of patient with urinary obstruction showing very marked improvement in suprapubic drainage. Blood urea curve shows a rapid drop from 150 mgm. to 50 in 10 days, and then from 50 mgm. to 25 mgm. in 30 days.

Phthalein curves show very remarkable improvement from curve 1, which is a flat line, with an appearance time of 2 hours, through curves 2, 3, 4, 5, and 6, the appearance time moving from 2 hours down to 15 minutes, and the apex of the curve slowly moving from 2½ hours in curve 1 to 1 hour in curve 6. Then, following operation, we have the best curve of them all, curve 7, with appearance time of 10 minutes and 20 per cent in the first half hour. The totals have increased from practically 0 to 62 per cent in 2 hours. Following the removal of the obstruction, the curve approximates much more nearly the normal, with the greatest excretion in the first half hour, even though the total excretion in 2 hours is slightly less than in the preceding curve 6.

Urogram 1.

Urogram 3.

Urogram 2.

ureter, the blockage being just outside of the bladder. The urogram shown is a fifteen-minute plate and, as is quite plainly seen, the Skiodan has been secreted in the right kidney in abundance, giving a beautiful shadow of the renal pelvis, calyces, ureter and bladder. This is evidently an hypertrophy to compensate for the destroyed left kidney, the large shadow of which can be easily seen with some calcification in the region of the renal pelvis. There is no evident function in the left kidney. These three urograms show what we mean when we say that intravenous urography can give a rough idea of the comparative function of one kidney with the other.

In the consideration of this whole subject, one must never forget that in the practice of medicine the results of these tests and the information gained from direct observation of the patient should all fit together into a logical and intelligent understanding of the individual's renal capacity.

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## GRAIN ITCH—REPORT OF TWO CASES OCCURRING IN A SMALL EPIDEMIC.*

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The purpose of this paper is to invite the attention of general practitioners, particularly in agricultural communities, to a distressing cutaneous malady which, although well known to the dermatologist, is probably unfamiliar to the majority of the profession.

*Definition.*—Grain itch is an acute inflammatory disease of the skin, caused by the Pediculoides ventricosus, and characterized by an eruption of pinkish-red erythemato-papular or erythemato-urticarioid lesions topped by a central vesicle, occurring principally on the trunk, and attended with violent and persistent itching.

*Synonyms.*—A few of the many synonyms of the disease, giving as they do a clue to its etiology, are of interest here: Grain mite dermatitis, barley itch (Wills), straw itch (Rawles), straw mattress disease, straw-packers' itch, etc. The less definite designations of prairie itch, swamp itch, Ohio scratches, etc., often point, in the opinion of Stelwagon and Gaskill,[1] to the same etiologic factor.

*Symptoms.*—The characteristic lesion of the eruption, according to Schamberg,[2] is an urticarioid wheal surmounted by a tiny central vesicle that rapidly becomes lactescent or even puriform. The vesicles vary in diameter from that of a pin-point to that of a BB shot (0.5 to 2 mm.). When of the larger size, if the skin between the wheals be not too erythematous, the cutaneous picture may strikingly resemble that of chicken-pox. In many cases, however, the efflorescence is erythemato-papular or erythemato-urticarioid, with here and there characteristic central vesicles. The latter may be replaced by blood-crusts, or by excoriations, due to scratching. The lesions range in size from that of a lentil to that of a finger-nail, and are rounded, oval or irregular in outline. Their color is a rather vivid pinkish red, like that of the papules in early scabies. The distribution of the eruption varies; but the neck and the trunk, and, to a lesser extent, the arms and the legs, are usually involved. The face may show a few lesions; but the hands and the feet are ordinarily exempt.

Among the subjective symptoms, itching is invariably violent, if not intolerable, and is, as in scabies, worse at night, making sleep difficult or impossible. Malaise, anorexia, nausea, vomiting, chilliness, and rise of temperature also may be experienced.

*Etiology.*—As early as 1829 an itching eruption in persons who had slept in barley-straw beds was observed in Massachusetts.[3] In 1849, Lagreze-Fossat and Montane, in France, noted the affection and the "Acarus tritici" in association with it. In 1853, Newport, in England, gave to a mite that he discovered in 1849, on the larvae of a wasp, the name Heteropus ventricosus; but as the genus "Heteropus" was preoccupied, Targioni-Toizzetti, in 1875, substituted the generic name "Pediculoides." In France, Robin, in 1867, and in Hungary, Geber, in 1879, and Koller, in 1882, as well as other Europeans, about the same time or soon after, published observations on the mite and the affection that it causes. Although the presence of the Pediculoides ventricosus in this country was noted by Webster in 1882, it was not until 1901, when Schamberg[4] contributed his first paper, that the disease which the pediculoides produces was clinically described in the United States. In that paper, no parasite was assigned the etiologic rôle. But on July 9, 1909, fifty-six years after Newport's apparently erroneous naming of the pediculoides, Schamberg and Goldberger[5] announced the results of a joint investigation demonstrating that the affection was caused by a mite that Banks, of the Bureau of Entomology, stated "is very close to, if not identical with, Pediculoides ventricosus." Only six weeks later (August 15th) Rawles[6] published a description of a cutaneous disease that he termed "Dermatitis Ditropinotus Aureoviridis," or straw itch. It presented the identical clinical symptoms noted by Schamberg. But Rawles proved that it was caused by a parasite that Mr. James Troop, entomologist, had identified as Ditropinotus aureoviridis, "a new species of parasite, it having been described last year [1908] for the first time." In 1910, Schamberg,[7] amplifying his previous work, and reviewing the literature of the subject, stated that the disease and the associated parasite described by Rawles are identical with those described by himself. Since then the Pediculoides ventricosus has been accepted by dermatologists as the cause of the affection. The mite is parasitic on the

*From the Dermatologic Service of Dr. Herman E. Kittredge, St. Elizabeth's Hospital.

wheat strawworm, the jointworm, the grain moth and many other insects.

*Diagnosis.*—Scabies, pediculosis corporis, varicella, and urticaria must be excluded. Scabies is excluded by absence of burrows, by lack of involvement of the hands, by involvement of the face in adults, by pronounced invasion of the interscapular region, by erythemato-urticarioid lesions surmounted by vesicles, by constitutional symptoms, and by failure to find the Acarus scabiei upon microscopic examination. Pediculosis corporis is excluded by absence of the characteristic hemorrhagic spots, by absence of parallel linear scratch-marks radiating upward and outward from points on the upper back, and by absence of the pediculus and its ova. Varicella is excluded by comparatively long duration of lesions, by the smallness of the vesicles capping elevated papules or wheals, by violent and persistent itching, and by high incidence in adults. Urticaria (including urticaria bullosa) is excluded by lack of evanescence in lesions, by the largest of the surmounting central vesicles being less than three-sixteenths of an inch (5 mm.) in diameter, by absence of constitutional symptoms, and by multiplicity of cases in a family or other group. A history of contact with grain or straw is of diagnostic import.

*Treatment.*—This will be indicated in the following:

## Report of Cases

*History.*—On June 8, 1933, the physician in charge of the general medical and surgical division of St. Elizabeth's Hospital requested me, by telephone, to see two employees who had been itching since working in a barn three days before, and whom he was sending to my office. The words "barn" and "itching" suggested that I was to witness some of the master handiwork of the little pediculoides; and even a casual personal inspection, made a few minutes later, was sufficient to convince me that I had not been disappointed. L. G. and N. R. B., males, white, aged 63 and

Fig. 1 (L. G.).—Photograph taken on third day, showing distribution of eruption on posterior aspect of trunk, arms, and legs.

Fig. 2 (L. G.).—Photograph taken on third day, showing erythemato-papular and erythemato-urticarioid lesions, with surmounting central vesicles excoriated, on anterior surfaces of legs.

31, respectively, carpenters, had been directed, three days previously, to visit a barn that is located about four miles distant, in Maryland, for the purpose of making interior repairs. For a number of years, it had been the practice to stow, upon a hay-mow in the barn, baled wheat straw grown on the farm belonging to the hospital. There was no appreciable amount of the straw itself on the hay-mow at the time; but there was an accumulation of fragments, chaff, and dust, from the straw. The two men, L. G. in particular, stood and sat upon the mow during the course of their work. When they entered the barn, in the morning, they were free from any cutaneous affection; but before they left the building, about four o'clock in the afternoon, they had begun to itch.

*Examination.*—Three days later, when first examined by me, one of them (L. G., Figures 1, 2, and 3) showed an acute inflammatory eruption, erythemato-papular and erythemato-urticarioid in type, involving the larger part of the trunk, the arms, and the legs. A tiny central vesicle or pustule topped many of the lesions. In the other case (N. R. B., Figure 4), the eruption was less general; but a broad band, or collar, of the lesions completely encircled the neck. In both cases, the face, the hands, and the feet were free. The itching was violent, entirely preventing sleep in the case of L. G. This patient developed constitutional symptoms, including a definite rigor.

Fig. 3 (L. G.).—Photograph taken on third day, showing erythemato-papular and erythemato-urticarioid lesions, surmounted by central vesicles or pustules, on posterior surfaces of trunk and left arm.

*Diagnosis.*—Scabies, pediculosis corporis, varicella, and urticaria being definitely excluded by the history and the symptoms, the diagnosis of grain itch was made, without looking for the pediculoides.

*Treatment and Results.*—For the acute stage, Schamberg's ointment was prescribed—Rx Betanaphtholis, 2.00 gm., Sulph. praecip., 2.60 gm., Adipis Benzoat., 30.00 gm. M. This was applied practically as are similar ointments in the treatment of scabies. After four days, soothing lotions were used. One of the patients (N. R. B.) was entirely well, and in the other (L. G.) the eruption had almost completely involuted, twelve days after instituting treatment.

*Further Incidence.*—Six additional cases developed and were treated by other physicians connected with the institution.

Fig. 4 (N. R. B.).—Photograph taken on third day, showing erythemato-papular and erythemato-urticarioid lesions, surmounted by central vesicles or pustules, on posterior surfaces of neck and left shoulder.

Two other cases of grain itch, occurring in husband and wife, in a wheat-growing section of Fairfax County, Virginia, came under my notice in September, 1925.

## Summary

Two cases of grain itch, occurring in an epidemic of eight cases caused by contact with debris from infected wheat straw, are reported.

## Comment

As the disease is liable to be encountered

anywhere in agricultural sections of the Eastern United States between May and October, it should be of particular interest at this time to physicians in rural communities.

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412 *Columbia Medical Building.*

## THE PROGNOSTIC VALUE OF THE ELECTROCARDIOGRAM.*

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The recent sudden death of a very prominent and lovable Presbyterian clergyman in the office of a professional man in the city of Norfolk and the more recent sudden passing of a former president of the United States at his home in a Massachusetts city serve in no small way to call our attention to the growing significance of heart disease. According to the papers the minister, who considered himself in excellent health, was suddenly seized with a violent pain. He sought the office of the professional man and expired in a few minutes. The cause of death as reported was angina pectoris. The body of the former president of the United States was found lying upon the floor of his dressing room, where he had retreated for the purpose of shaving. But the significant part of both of these stories is that the patients belonged to the white race and were educated men. One hardly expects, however, the relatively tranquil life as led by a minister of the gospel to bring into being such troubles as high blood pressure, cerebral hemorrhage or coronary occlusion, though we must confess that none but the hardiest individuals can survive the pressure of the presidency as it is now conducted. Nor is this all. It is only necessary to recall that our own profession in Norfolk has lost nine of its prominent members in little over a year. One had reached the age of seventy-six; two died at sixty-seven; five passed away at ages varying from fifty-eight to sixty-one; one left us at fifty. Of these nine three died of coronary disease. So that we may well repeat that the increasing death-rate from heart disease among the educated members of the white race presents indeed a problem.

My own experience in the domain of heart disease has been full and ample. I have seen much that is usually denied to others. But it is especially the element of sudden death due to grave coronary and myocardial disease that has aroused me most. As a very young man the sudden death of the mother of one of my old college mates supposedly after an attack of indigestion; as a young practitioner the sudden passing at a railroad station in a North Carolina city of an old friend, who had been more than a professional father; and, in my days of general practice the sudden expiration of a patient, a lady in the late fifties (who had suffered with pain in the lower left chest and had carried for many months both strychnine and nitroglycerin tables in her bag) on the porch of a residence, where she had stopped during a walk on a Sunday afternoon,—these have contributed in no small measure to my interest in the problem of sudden death. With the invention of the many instruments of precision that are used in the examination of the heart this field has become more than fascinating. I have had the opportunity of seeing in consultation many patients, who have died suddenly. Of the three medical men, of whom we spoke above, and whom we have lost only recently from heart disease, one had an attack in my office some years ago, one was referred to me for an electrocardiographic examination as a part of a general survey, one became alarmed at an increase of blood pressure accompanied by malaise and

*Read before the Norfolk County Medical Society, Norfolk, Va., January 16, 1933.

weakness. And so, apart from the many opportunities that I have had through the courtesy of instructors and friends, I feel qualified by experience at least for preparing the paper, which I now present.

The advent of a special interest in cardiology is most interesting. As a student of medicine in the late nineties and early hundreds I learned that the diagnosis of heart lesions was to be made solely upon the history and physical findings. It was indeed an era of theory and guess work. The correlation of clinical observation and post-mortem findings was denied to all but the favored few. But, even then, to paraphrase a famous clinician, "signs would sometimes lie." With the advent of the instruments of precision, such as the sphygmomanometer, the determination of the basal metabolic rate and the roentgen rays, many of the older mistakes were corrected; but much of the educated touch and clinical observation was lost. The internist, so to speak, became a sort of medical clearing house. Fortunately, the pendulum has now swung to the middle of the arc. The clinician must now use his own powers of observation and, if possible, combine them with his own use of the instruments of precision. The modern cardiologist is prepared to use all methods that will aid him in the study of the case.

He has, accordingly, felt that there is a certain something behind the clinical, physical and laboratory findings that he must know. He must, if possible, learn something of the internal working of the heart. The correlation of the feel of the radial pulse and of the observation of the pulsation of the veins of the neck was not sufficient for Mackenzie and so he invented the polygraph, whereby simultaneous tracings could be made of the arterial and venous pulses. A little later Einthoven, finding that an electrical current was generated at every heart beat, devised his electrocardiograph, whereby these electrical impulses are translated into a tracing and duly recorded. The resulting electrocardiogram is much simpler of interpretation than the polygram of Mackenzie and, while much study has been given and must still be given, so much has been learned that in most cases he who runs may read.

The use of the electrocardiogram is primarily one dealing with diagnosis. The division of the heart beat is such that the time, strength and quality of both auricular and ventricular beats together with their sequence is determined and recorded. It becomes, therefore, the great instrument in diagnosing the arrhythmias, such as the comparatively benign sinus arrhythmia and extrasystole, the annoying tachycardias, auricular fibrillation and auricular flutter and the alarming heart block, pulsus alternans and ventricular fibrillation. Nor is this all. The tracing is a direct indication of the character of the musculature of the heart. The relation of the iso-electric line, the quality and duration of the ventricular beat and the character of the ventricular rebound, or T-wave, will determine most unerringly in most instances the present or absence of myocardial weakness or of muscular degeneration. I might continue almost indefinitely. But, as the various arrhythmias rarely kill a patient *per se*, it will be necessary to limit our discussion to those diseases, which, as we have said above, are attended by a sudden exodus. The electrocardiogram will aid us in the diagnosis of coronary disease, heart block and pulsus alternans. If we would know of the prognostic use of the electrocardiogram, let us first learn of its diagnostic value.

The various pains occurring in the chest are likely to give the examiner much trouble and uneasiness. The precordial aching, so characteristic of neuro-circulatory asthenia, or effort syndrome, the paroxysmal substernal oppression, especially if accompanied by pain on the inner side of the left arm, as in angina pectoris, and the excruciating pain accompanying a coronary occlusion,—these indeed present a diagnostic problem. If only those pains occurred in actual practice as the writers of our textbooks present them, the differential diagnosis would be an easy one. But not so. These cases command our attention and our best and most painstaking efforts.

In my own experience the diagnosis of neurocirculatory asthenia has been comparatively easy. A sudden collapse after some form of effort in a young or middle-aged patient, acpanied by the symptoms of shock together with pain in the chest and a pounding of the heart, these present a very clear and definite problem. After recovery it will be observed that the physical, laboratory and electrocardiographic examinations are negative. But it will also be observed that the effort causing the symptoms is usually of a disagreeable

nature, while an equal or even greater effort of a pleasurable type will cause no such reaction. My last case was that of a professional embalmer, aged 28, who as a sergeant attended one of our military camps. His occupation while at camp was that of a chauffeur and was not especially pleasurable. He collapsed and caused the camp surgeon much alarm; likewise, after two recent embalmings. But, upon close questioning, he admitted that exercise or nervous tension likely to afford him a certain amount of pleasure brought no such reaction. The physical examination, the roentgen examination and the electrocardiographic examination are all negative. The blood pressure is a little low. I might also mention the case of Miss X., aged about 60, a school teacher by profession. She suffers with a tachycardia and some pain, mostly in the upper left chest. She has never had any very severe attacks, continues her vocation and looks well. She has, however, been told that she has a myocarditis. Her physical, roentgen and electrocardiographic examinations are negative save for the slight tachycardia. But no amount of argument or of examinations by cardiologists other than myself will convince her that a myocarditis does not exist. In like manner, the Reverend Y., aged 60, has occasional spells and has been told that he suffers with angina pectoris. The character of the pain, however, is not typical. He has had considerable difficulties with various congregations, but drives his car for long distances and appears well. The electrocardiographic examination is again negative. And so I believe that, though we are often inclined to diagnose many cases as angina pectoris, those presenting angioid symptoms, especially attending some form of mental or physical exercise of a disagreeable character but not after pleasurable exercise, must be diagnosed regardless of the age as neuro-circulatory asthenia. A certain amount of self-hypnosis can often be observed.

But no such history attends a case of angina pectoris. Let us take the case of a severe substernal pain occurring in an elderly man or woman and radiating down the arm, usually the left one, where the question of effort seems to play but a small part, especially as to whether the effort is of a disagreeable or pleasurable character. Such a patient has to stop at once and the question arises as to whether any exercise shall be allowed or only such an amount of exercise as will not cause an attack of pain. The diagnosis is usually unmistakable, especially when there is a history of the thought of impending death (though it is usually agreed that such a history is not necessary for diagnosis) or when prompt relief has been afforded by the use of the nitrites. It is further to be observed that these cases belong to the white race and usually occur among the educated classes. Here, again, physical examination is negative, the roentgen examination is likewise negative, and the electrocardiographic examination is also negative.

We now come to a third type of pain, viz., that associated with coronary occlusion, "perhaps," to quote White, "the worst pain that can be experienced by man." The classical case is easily diagnosed—a severe pain in the epigastrium or lower left chest often accompanied by pain radiating down the left arm, no relief from the nitrites, a pain persisting and readily recurring. Of this I have seen many cases. Some authorities seem to consider coronary occlusion as an advanced state of angina pectoris, and would so classify it; for in some way the clinical symptoms seem to intermingle. But, again, a large number of cases suffering from the lesion of coronary occlusion experience little or no pain; they persuade themselves that they are suffering with some form of indigestion. If we will recall the case of the Presbyterian clergyman, whom we have mentioned above, he informed the professional man, to whose office he had retreated, that he was suffering from indigestion caused by some apples eaten the night before. The former president of the United States we are told was also wont to suffer from indigestion. I would, however, call the attention of those clinicians, who consider this entity as a late stage of angina pectoris, to the fact that coronary occlusion is not the exclusive property of the white race. I have seen it in a negro male.

Unlike neuro-circulatory asthenia and angina pectoris, coronary occlusion is accompanied by typical changes in the electrocardiogram. The changes occurring in the T-wave are eminently diagnostic. This T-wave is reversed in one or more of the leads and is usually accompanied by a peculiar deflection at the beginning, known as a Pardee's sign. If this inverted T occurs in the first lead or in both the first and second leads, we usually associate it with a lesion in the left coronary

artery; if in the second and third leads, with the right. An inverted T in the third lead is usually considered of no importance. Recently, however, this inverted T in the third lead, if accompanied by a large Q-wave, has been considered also as an indication of a coronary lesion, though there are some who seem to feel that a septal defect should be suspected. More recently Wolfert and Wood have described a chest lead and have felt that a change in the iso-electric line in this lead was indicative of coronary disease. But, be all these interpretations as they may, the definite changes in the electrocardiographic tracing are usually diagnostic. If not definitely diagnostic, they should call for a further study of the case.

It will not be out of place to compare the clinical with the electrocardiographic prognosis in the cases of both angina pectoris and coronary occlusion. We shall compare the best available statistics. Thus White and Bland have furnished us with a clinical study of five hundred cases of angina pectoris and two hundred cases of coronary thrombosis. "Of the five hundred cases of angina pectoris two hundred and thirteen are dead with an average duration of life of 4.4 years after the onset of the disease. The average duration of life to date for the total series of five hundred cases is 4.9 years. Of the patients who died, death could be attributed to failure of the heart in 82 per cent, and a sudden exodus was frequently encountered. About one-fifth (19 per cent) had normal hearts on physical examination, normal blood pressures and normal electrocardiograms. * * * Of the series of two hundred cases with coronary thrombosis, one hundred and one are dead with an average duration of life following the attack of 1.5 years. The average duration to date for the entire series of two hundred patients is 2.4 years. The patients who died almost invariably succumbed to failure of the heart." On the other hand, Carter has quoted the statistics of Willius, which are based entirely on the use of the electrocardiogram. A recapitulation shows that of 883 cases showing an inverted T in lead I from whatever cause, 535 (60 per cent) died in less than nineteen months; of 397 cases showing an inverted T in both the first and second leads, 241 (60 per cent) died in less than thirteen months; of 211 cases showing negative T's in all three leads, 141 (66 per cent) died within seventeen months; and of 259 cases showing a negative T in both the second and third leads, 120 (46 per cent) died within less than twenty-four months.

As we have stated above, the various arrhythmias rarely cause death *per se*, yet it is important to note them. Of these an auriculoventricular heart block (especially a complete one) should give us full warning that, unless something favorable happens to the patient, death may be expected. Particularly is this true in Adams-Stokes disease. Unfortunately, however, no statistics are at hand. Then, too, as we have said above, the character of the ventricular beat, or QRS complex of the electrocardiogram, must be studied, its strength, width, slurring, etc. For it is upon these that diagnoses of myocarditis, adhesions and bundle branch block lesions are made. I would also call your especial attention to the question of pulsus alternans. While perhaps an auscultatory gap in the examination for blood pressure would make the examiner suspect the lesion, or it is better delineated in the pulse tracing, still in the great majority of cases the electrocardiogram is more than diagnostic. In my own experience the variation of alternations in the height of the ventricular contraction is best shown in the third lead. Recently I saw in consultation a lady, aged 54, whose tracing showed an accent upon every third beat. Grave myocardial disease was, of course, recognized; but we were not prepared for a sudden exodus a year later.

This discussion, though far from adequate, should serve in some way to show the interest that must be taken in the electrocardiogram, for the tracing has passed the days of being merely of an academic interest; its clinical meaning must be recognized. It will serve to differentiate and explain the various arrhythmias; it will serve to differentiate between and diagnose the exceedingly grave diseases known respectively as angina pectoris and coronary occlusion. It will inform us of the state of the myocardium. It will prognose in no uncertain way an approaching exodus. And so, if we would be true to both our patients and ourselves, an electrocardiographic examination should be made in every doubtful case. The intelligent study of any disease or of any patient requires the use of all of the available facts. This is especially true of heart disease. The educated touch and trained ear

no longer suffice. Like Lord Bacon, we must take all knowledge as our province. For, as we have said above, the problem of heart disease, especially among the educated members of the white race, is indeed a problem.

My thanks are due to Dr. H. S. Baker, Dr. John Beattie, Dr. L. L. Eley, Dr. M. S. Fitchett, Dr. E. T. Glover, Dr. C. L. Harrell, Dr. A. B. Hodges, Dr. Eugene Lowenberg, Dr. Walter B. Martin, Dr. Robert L. Payne, Dr. Frank H. Redwood, Dr. N. F. Rodman, Dr. George Schenck, Dr. C. C. Smith, Dr. J. Warren White, Dr. L. W. White, Dr. R. C. Whitehead, Dr. N. G. Wilson and many others, who have referred their patients to me for examination and study. Without their kindly cooperation this paper could not have been written.

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*Medical Arts Building.*

## THE SURVIVAL OF THE FAMILY DOCTOR.*

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An Unfortunate Tendency. — In these times, which, to the oldsters among us at least, appear abnormal, certain tendencies seemingly directed towards a complete overturn of many institutions of the old order are finding a degree of acquiescence from a large section of the public that, to thoughtful men, is of sinister significance and bears implications most destructive to much that is best in our civilization.

Among these tendencies is the disposition to consider the family physician an obsolete institution. There are few of us who have not at times yielded to the discouraging drift and deplored what seemed the inevitable disappearance of the old time family doctor. This tendency should not be allowed to become chronic. I wish, therefore, at this time to sound an entirely different note, for thoughtful consideration of the whole subject has led me to the conclusion that there is no occasion whatsoever for despair.

Essential Service.—The family doctor, with all that title implies, is needed more than ever, and if the medical profession is to survive independent of State subsidy—if, in other words, some form of State medicine is not to swallow up an institution which has served as a sheet anchor to the American home,—then something more than talk and protests against public health activities—National, State or local—will have to be done. A resort to organization and unified action will not in itself serve to stem the tide for long, though close organization is essential in any event. (In a paper before the Medical Society of Virginia at Roanoke in 1909 I emphasized this point—"Duty of the Doctor to his Municipality," *Charlotte Medical Journal*, November, 1909.)

The doctor in politics—and he ought for other than personal reasons to be there in larger numbers than now—will always be more or less of a fish out of water, for he cannot, if he be the right kind of a doctor, compete very successfully with commercialism in politics any more than he can compete with it in medicine.

Undesirable Terms.—He need, therefore, not expect a complete remedy for his ills, social and financial, through such channels. In such case, to save himself would be to lose the very quality that makes him in the highest degree worth saving. Salvation on these terms, if it were possible for him to achieve it, would simply mean freedom from competition, except such competitors as he, from the limited viewpoint of curative practice, judged to be friendly to him. The stimulus of intelligent competition is needed to prevent rusting. Pure self-interest exhibited by the doctors is, if anything, a more unlovely trait than it is in any other self seeker. As I see it, an essential element in every true physician is disinterested humanitarianism. In the eyes of the public, as soon as the doctor parts with this quality, he loses caste and stands on all fours with the pettifogger and the quack, and a noble art is debased to the status of money grubbing commercialism. The inconsistent public, though itself commercially-minded, always looks for something higher in its doctor, and

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usually finds it. The physician is now caught between his idealistic standards and his dire necessities. Is it any wonder that many bewildered doctors, seeing certain forms of sickness disappearing, and the ability to meet the costs of decent living daily becoming more difficult, prophesy loudly the rapid disappearance of the family doctor?

Test of Time.—This attitude to my mind is unphilosophic, for an institution that has stood the test of time as the family doctor has, an institution that has lost no valuable quality that it ever had, but, on the contrary, year by year in its true expression has demonstrated increased capacity for essential service to humankind, should not die, and I am persuaded will not die unless it is done to death by disintegrating influences operating from within the ranks of medicine itself. If such influences are at work, and this appears to be the case, words will not banish them. The application of modern methods only can combat the ill effects to the doctor consequent upon the changes which have come.

Stagnant Talent.—Medicine, while enjoying and revelling in the appellation "learned profession," is not composed of uniformly learned and progressive men. Doubtless the average is high, but too many doctors neglect to use their opportunity to keep pace with advances in the most rapidly growing profession of them all. The result is too often medical stagnation in some back water, while the stream of modern life moves on. If the general practitioner does not call in a specialist for his well informed patient, when quick response to his own treatment is not forthcoming, the patient will go elsewhere of his own accord, and thereafter be his patron no more. The people who can afford it wish the best service possible and usually know where to look for it.

For every physician to do his own major surgery, his own ophthalmology and otology, his own orthopedics, and his own X-ray work is neither practicable nor desirable, but the aspects of his profession for which he has qualified, and which by application and study he can and should keep fresh upon, and which constitute nine-tenths of all the medical work in his vicinity, should be his to handle, and to him should go all the credit and cash that legitimately inheres thereto. I firmly believe that few general practitioners of medicine, however busy they may be, are doing a tithe of the medical work that should be done in the homes of those who normally look to them for medical advice. The alert doctor knows this, but how to meet the situation is not so clear to him.

This is no occasion for censure, but it does call for a thoughtful and sympathetic consideration of all practicable and honorable means proposed for the preservation of the family physician intact.

Completely Useful.—Compassing the full medical job in any given community apparently involves "digging up" medical business, and the doctor conceives this to be an unethical proceeding. All traditions of the profession are against it. I submit, however, as a matter of straight morality entirely apart from medical polity, that the ethics of the patent medicine man, who with all the arts of "bally hoo" calls attention to the need for relief from some common ill to which flesh is heir, and suggests a remedy—however futile,—are in essence higher than those of the man who alone has knowledge of a man, woman, or child in mortal danger from a deadly malady and yet says no word of warning or fails to use facilities available to him to make that danger plain. A conception of ethics, medical or otherwise, that hinders anyone pointing out the danger in such circumstances has no place in any humanitarian scheme. Like many aspects of orthodox religion, adherence to old interpretations of the letter of the law has obscured the spirit with the same result, the family doctor's offices, like the churches, are slowly emptying.

Taking Stock.—My thought is that, if the general practitioner in city, town, and country will closely examine some of his cherished "ethical" viewpoints, he will not only find that they have no sanction by any true ethical standard but that they negative many fundamental tenets on which his profession has relied for its high standing before the world. Take, for instance, the two infectious diseases contributing more largely than any others to the death rate, namely, syphilis and tuberculosis. The doctor sees these cases before any one else. He knows, as the patient cannot know, their acute contagiousness and their death dealing character. He knows that these diseases take heavy toll of the future, and that children carry the heaviest burden from them both. He is unfortunately also acutely aware of the association of these diseases with poverty and poor pay. He hesitates under the ethical code, as

he interprets it, to do anything towards "drumming up trade," so he is slow to suggest that other members of the patient's family will from the moment of diagnosis of that patient's disease need more or less constant attention from a physician. I know some of you will say that I am setting up a straw man, and that many physicians do go into detail about these matters regardless of the patient's reactions. I am happy to say that I know such to be the fact—many do, but more do not,—and I also know that the increase in the incidence and in deaths and disabilities from syphilis throughout the land, and the slow, very slow reduction comparatively, of the tuberculosis death rate speaks in trumpet tones that the knowledge of which the medical profession alone is custodian is not being made available where it can be advantageously used to prevent the widespread infection of unsuspecting people and the deaths of many children.

The Best Way.—I say advantageously used advisedly. Hitherto when I have used this expression in this connection, I have thought in terms of health department use of this information. I have come to believe that, however important it may be, and it is highly important for the health authorities to have early information of the deadly infectious diseases such as syphilis and tuberculosis within their jurisdiction, it is yet more important that the doctor who sees a case of either of these diseases shall act on his knowledge at once and see that they extend no further than that case. This involves more than treatment of the sick individual and warning and advice for the protection of the home, and it involves more than making a report and "passing the buck" to the health department, though such report will bring him aid and support in his efforts. In my judgment, to do a complete job, the proper action of the physician in such a case means the seizure by him of the strategic point in medical practice, which, if occupied and held by him, will enable him to sustain indefinitely the character of family physician. To make my meaning clear, a definition is in order. What is the meaning of the term family physician? If it means anything it should mean physician to the whole family, the apparently well, as well as the sick that are there, not simply a touch-and-go visit to a sick person.

An Open Secret.—When an infectious disease is diagnosed, a full discussion with the responsible householder is necessary concerning all the implications of the disease in question. Such a conference should always take place in the case of active tuberculosis, and is no less important in open syphilis. Most doctors observe the necessary precautions in typhoid fever, diphtheria, scarlet fever, and such diseases by comparison are relatively unimportant. The disease tuberculosis, though slow in its manifestations, is as infectious as smallpox, and when there is an active known case there are always others infected. The family physician can and should find these cases. He should also know where his syphilis cases are too. If he does not find these socially destructive plagues, and do his part in control, society will demand that machinery be set up to take over permanently the job, a purely medical task. The State has already taken steps in this direction, which in my judgment it should, and will retrace as soon as the doctor himself meets the issue. Many now think that the State should do it all, but I firmly believe that if the State does more than it is doing now in diagnosis of disease it will be adding but another drop to the poison cup now in the family doctor's hand, and thus contribute to the inevitable verdict of slow suicide. This denouement is in no sense necessary. There is no need for the doctor to take hemlock, or, what amounts to the same thing, drug himself to death with false hopes nursed in an arm chair.

Intelligent Resistance.—I contend that the doctor should not take this situation lying down. Things medical should be taken over by medical men. Those services upon which the health and physical well-being of the family depend are the business of the family doctor, and it is incumbent upon him in consultation with his fellows to find a way to meet the issue. If preconceived ideas as to medical dignity get in the way, then so much the worse for the ideas and the dignity. Life and health of the public and the physician's salvation are at stake. The family physician in the country cannot much longer sustain himself in the face of easy transportation and good roads (the airplane ambulance will be the next development) unless he proves himself indispensable. This he can do only by proving his quality as a family necessity, not for his function solely as a healer but as a conservator and health promoter. Every dotctor, in my humble judgment, should be paid a retaining fee for gen-

eral office consultation by the families in his clientele, and a separate fee for service requiring visits to the homes and for special service whether at home or in his office. Is this an impracticable suggestion? It means, of course, that the practitioner must equip both himself and a modern office so as to deserve the complete confidence of the community in his medical knowledge. The doctors that are sustaining themselves satisfactorily now are thus equipping themselves. The practice ought to be universal.

Begin Early.—Keeping an eye to the children's health, preparing them to meet the five point test, vaccinating them against smallpox and typhoid fever, immunizing them against diphtheria, testing them for tuberculosis, attending to their minor ills and accidents at hours regularly set for such service, might be covered by a retainer. It is medical service, it is protection, that is, preventive in the highest sense, and it is essential to the well-being of every well regulated family. Obstetrical and gynecological attention, tonsil and adenoid operations, setting fractures and dislocations, suturing wounds and giving other emergent surgical service as well as medical adult attention at office or home should be charged for as usual or on an agreed upon fee basis. Under such a schedule the largest part of a doctor's work will be done in his office. It would be none the less family service of the most effective kind and offer unexcelled opportunities for indoctrinating the younger generation in the desirability of checking up on themselves at stated intervals. If periodic medical examination of apparently healthy individuals is ever to become popular, it must be by demonstrating its purpose and value at an impressionable age. Such a plan, if sponsored by local medical societies, could be put into effect by business groups or clubs acting as go-between in its establishment.

Preventive Physicians. — Family doctors under this plan would be in a real sense the health officers of the community, realizing for their preventive service a stated income from the people directly benefited and in proportion to the service rendered. This it seems to me would be far preferable to a subsidy to the local doctor from the State for such service or to a State doctor hired for the purpose. One does not have to be a prophet to foresee that one of these alternatives will prevail unless some more acceptable plan devised by the doctors is instituted. State public health workers under the present regime desire earnestly that the welfare of the physician wherever he may be shall be conserved, but no one can promote that welfare so well as the physician himself. The best that can be done from the outside is to remove unnatural hindrances to his success. I do not think the doctor expects more. Less under no circumstances should be given him.

Fair Play.—So far as the State Health Department is concerned, he will have a fair field, and, in view of the indispensable nature of the public health service he can render, will be supported by it in efforts to secure substantial recognition for such service. Newer methods must supersede the old. The horse and buggy time has gone. Now railroad transportation is going. Scientific procedure has replaced rule of thumb methods, and the doctor must adjust himself to the new day or find himself in serious case indeed. Virginia medical men under the leadership of the doctors who direct the policies of State and local medical Societies will, I believe, thoughtfully consider all aspects of the doctor's situation and find means to preserve, in all its transcendent quality, the prestige, power, and affectionate regard associated with the name "family doctor."

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## EXAMINING MEN FOR ROAD RELIEF WORK IN VIRGINIA.

B. F. RANDOLPH, M. D., Arrington, Va.

Nelson county, in which I live, received from the State of Virginia about twenty-six thousand dollars of the money lent the State by the Reconstruction Finance Corporation for unemployment relief work on State roads. This fund is administered by the Nelson county work relief committee and men without work have to apply to it for employment. The road work is carried on under the supervision of the State department of highways.

All men seeking this relief employment are required by the State to submit to a physical examination, and it is here that the physician enters the picture. Though the fee allowed for these examinations is ridiculously small, being only fifty cents per man, it is not to be sneezed at during these hard times. On the contrary, it has been gladly welcomed by all the doctors in this neck of the woods.

Applicants for work were accordingly instructed when and where they must appear to

take their physical examination. The work orders and physical examination blanks were sent to the various doctors by the secretary of the county relief committee.

Another doctor and myself were assigned to the work of examining men at Massie's Mill, Tyro and Montebello, in Nelson county, Virginia. A total of nearly three hundred men were examined at these places, about two-thirds being white and the rest Negroes. The white men, as is usually the case in the mountain sections of the south, were of good old American stock. The applicants examined at Massie's Mill and Tyro came from near-by farms which lie east of and near the foot of the Blue Ridge mountains. Those examined at Montebello, which is located on top of the Blue Ridge at an altitude of about 2,500 feet, were what may be termed real mountaineers. They came out of the crevices, so to speak, of these grand old mountains.

Massie's Mill is a hamlet of about a dozen houses, five of which are stores. It is located about seven miles from the foot of the mountains. The men were examined here in an empty store, heated by a stove. At Tyro the examinations were held in a schoolhouse, which happened to be available on account of the day being Saturday. At Montebello, we used a church. All of the men submitted to the examination in entire good humor. Some of them were a trifle nervous.

The work was done with alacrity and dispatch, not only on account of the large number of men to be examined at each place in a few hours, but because in giving examinations for such a low fee it was necessary to work fast, if it was to be worthwhile. Two of us examined them at the rate of twenty men an hour, or ten an hour for each physician. That is, we made a fairly complete and accurate physical examination of these men at an average rate of speed of six minutes to the man. In order to do this it was necessary for each doctor to have a clerical assistant to write down the findings on the examination blanks as rapidly as they were called out.

Each doctor retained for his record a carbon copy of the examination blanks of the men he examined. I give here what I found in connection with 100 of the men I picked at random from the lot I examined. To give a clear idea of what we had to do, one of the physical examination blanks is reproduced here:

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF HIGHWAYS

Physical Examination

NAME _____ AGE _____

ADDRESS _____ WEIGHT _____

HEART _____
(Comments)

LUNGS _____
(Comments)

HERNIA: YES_____ NO_____ IF SO, WHERE_____

VARICOSE VEINS: YES_____ NO_____ IF SO, WHERE _____

EYES: LEFT EYE _____ RIGHT EYE_____ (Snellen Chart Readings)

LOWER EXTREMITIES _____
(Show unusual conditions)

UPPER EXTREMITIES _____
(Show unusual conditions)

REMARKS: (Any other physical impairments found) _____

_____

THE ABOVE MAN $\begin{matrix}\text{is}\\ \text{is not}\end{matrix}$ PHYSICALLY ABLE TO DO LABORIOUS HIGHWAY WORK.

SIGNED _____ M. D.
Examining Physician

ADDRESS _____

Dated at_____, Va.

This_____ day of_____, 1933

I shall now give an analysis of the examinations of these 100 men. Their ages ranged from 16 to 71 years. Fifty of them were from 16 to 30 years old. The average age of the 100 men was 35.3 years. Their average weight was 151 pounds.

Only one man was rejected as not being "physically able to do laborious highway work." He was turned down on account of prominent varicose veins on both legs. His age was 55 years.

The stethoscope, of course, was used in examining the heart and lungs. The entire 100 passed this test satisfactorily. The principal thing we looked for here was heart murmur. Not a single case of it was found in this 100. However, my co-worker discovered four or five cases of valvular lesions in the group he examined. Life in the open and peaceful country, no doubt, was responsible for this remarkable showing. Would a like number of men from our cities come off so well?

In the examination for hernia only one man was found to have any indications of it, and he had only a slight impulse on the left side on coughing. The other ninety-nine showed no signs of it whatever. Only three cases of varicose veins, including the one already referred to, were discovered, and the ages of the men so affected were 54, 55 and 65 years. With the exception of these three men, the lower and upper extremities of the entire group were normal.

The only abnormalities discovered were the following: One man, 57 years old, had pendulous testicles; another, 53 years old, had an enlarged right testicle. My co-worker found in his group a young Negro who had an undescended testicle.

In examining the eyes Snellen's test revealed some interesting facts. The vision of sixty-six of the men was found to be normal, the readings being 20/20. Their ages ranged from 16 to 65 years. Sixty of these men were under 50 years of age. Forty-one were under 30. Twelve men, ages 16 to 59, showed a chart reading for both eyes of 20/30. Six men showed the following readings: Left eye 20/30, right eye 20/20. Four men, left eye 20/20, right eye 20/30. Three men, ages 60, 64, and 71, showed a reading for both eyes of 20/70.

Not a single case of pellagra was found among all the men examined by both of us at these three points.

Some proud folks may regard these men as the riff-raff of society. Be that as it may, it seems to me, that the results of this physical examination of these run-of-mine Americans are very enlightening and encouraging, particularly when we consider that there must be a great lack of proper nourishment among such people during these depressed times. These men were paid only $1.50 a day and none of them were permitted to work more than four days a week. The examination is thus a sidelight on a class of our people who are so much up against it that they are eager to get these small crumbs of relief.

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## GENERAL PARESIS—VIEWED FROM A MODERN STANDPOINT.

BITTLE C. KEISTER, M. D., Washington, D. C.

This is a disease whose etiology and pathology have been ably discussed for the past half century by such authorities as Osler, Stephens, Cecil, Wm. A. White, and others. Notwithstanding this array of distinguished writers and thinkers, we are still in doubt about the real etiology, biochemistry and pathology of this mysterious disease, believing these semi-modern theories are speculative and somewhat cloudy and misleading. Their theory of treatment, being that of malaria, a disease entirely different in its etiology and pathology, shows at once the uncertainty of a diagnosis of this disease, basing it on the etiology of malaria. According to the above-mentioned authorities, the average age for paresis to show its worst symptoms ranges from 30 to 50 years. The cause is given as due to Spirochaetae or syphilis of the brain, and is accompanied by all of the various symptoms, such as the Argyle-Robertson pupil, certain forms of dementia, and other marked brain disturbances. It bears a close resemblance to encephalitis-lethargica, with its various reflexes—the knee-jerk, which may be abnormal according to the stage of the disease, the Babinski reflex or syndrome, as well as many others. If the Spirochaetae is a causative factor of paresis, we may have various types of it, such as bronchial, where Spirochaetae are found in obstinate bronchitis and other pulmonary diseases; in fact, these Spirochaetae may be found in any of the vital organs—the kidneys, the heart, the brain and spinal cord, as well as the intestinal canal. We may find parasyphilitic gummata in the brain, usually in the frontal convolution, involving the speech cen-

ter, causing impediments and other disturbances of speech in ordinary conversation and attempts at making public addresses. These conditions are quite embarrassing to both the speaker and his hearers. In the course of time, these gummata produce softening of the brain tissue and result finally in ulceration, giving rise to various mental symptoms, with fluctuations of temperature, headache and confusion of thought, loss of memory, etc. While paresis is considered a form of neurosyphilis by some of our modern writers, the fact still remains unexplained from an etiological viewpoint, which fact has been a fruitful subject for discussion, and is today being discussed by some of our modern thinkers and writers. This is especially true among our French writers, where this disease is quite prevalent in the hospitals of France, it being observed more frequently since the World War. But why has paresis been more frequently observed since the World War than after previous wars, especially the Spanish-American and the Revolutionary wars when we knew so little about the etiology of paresis? We may have all the symptoms of paresis, yet the greater number of these symptoms may come from other kindred diseases, such as latent tuberculosis, which was in Biblical days known as scrofula, white-swelling, leprosy, chronic malaria, etc. Then some of our modern writers are treating paresis, as previously mentioned, with quinine and arsenic, adminstered both by mouth and hypodermically, claiming good results from this treatment. Amid this confusion in etiology and treatment of this well-known disease, the writer is not quite in a position to offer any definite form of treatment, and begs to await the discussion of his paper, provided its merits deserve a frank discussion of the arguments advanced on the etiology and treatment of this obscure and mysterious malady.

The writer is strongly of the opinion, if this disease is caused by Spirochaetae of true syphilis, the treatment should be specific, and a permanent cure expected in due course of time. This applies to both acute and inherited forms, but no treatment should be commenced until thorough Wassermann and Kahn tests are properly made by a competent specialist. Would it not be better for the patient and his or her family, amid all this confusion, to ignore the uncertainty of etiology—especially in view of the unfavorable prognosis—of this mysterious malady, until its true etiology and pathology are better understood by our pathologists? Otherwise, we, as physicians, may be subjected to criticism and possibly to malpractice suits by the laity for classifying this trouble with the common genito-urinary diseases, such as pox, gonorrhoea, syphilis, etc. We cannot be too cautious in this matter, knowing the sensitive minds of the laity, especially the better class of patients, who would like to hatch up a grievance against the well-to-do physician in times of depression like the past few years have been. We are conversant with conditions of this kind, both by observation and some little actual experience; hence, take this warning, my brother physicians, and do not trust your clientele too far. We, as a profession, must not forget that medicine is not yet an exact science, and hence not immune against errors and mistakes in our etiology, physiology, biochemistry and pathology; consequently, the necessity of precaution in our diagnosis of diseases such as encephalitis-lethargica, measles, rheumatism, pellagra, etc. We are fully cognizant of the bold stand and modern theory now held by our leading authorities in classifying the etiology and pathology of paresis with that outstanding and most degrading of all venereal diseases, syphilis, which may have been contracted by the patient or his ancestry ten, twenty, or fifty years previous to the time when the main mental symptoms manifest themselves. This long interval between the time of contracting the trouble and the lapse of twenty to forty years would, seemingly, place paresis in the class with tuberculosis, cancer and other incurable diseases, or, like smallpox, affording almost complete immunity *for life.*

In view of the fact that we have no satisfactory treatment for paresis in the last stage of the disease, especially after gummata and softening of the brain tissue have appeared with the various mental disturbances, and knowing the unfavorable prognosis, I would suggest, as a last resort for patient and family, that the patient be placed in a sanatorium for life, depending wholly on careful nursing and pleasant environment, with suitable and abundance of the best diet, allowing open-air exercise in the way of drives in the parks, etc. Above all other essentials, *sleep* is one of the most important, and the writer knows of noth-

ing better, when the open-air drives fail, than an occasional one and a half grain tablet of luminal at bedtime, to be repeated when necessary, say in the course of four or six hours. The writer knows of no better, non-habit-forming drug to produce sleep for a tired brain that needs sleep and rest. Some of my surgically inclined hearers may ask the pertinent question, "What should be done to get rid of the gummata that form in the brain?" This is strictly a surgical question, and while I do not care to trespass on the surgeon's field, yet my recent experience as consultant in a very typical case of paresis convinces me that surgery for the removal of gummata or tumor of the brain should not be tolerated, only in very exceptional cases, and then attempted only by the foremost expert, whose experience in this operation should entitle him to perform so delicate an operation. These gummata, according to the above cited writers, may form in various organs of the body besides the brain and spinal cord. They have been found in the lungs, heart, kidneys, larynx, spleen and in the various blood vessels of the entire body, especially where syphilis plays a part in the etiology and pathology of any disease. We may, as a complication of paresis, have tuberculosis and other serious conditions, such as pernicious anemia, etc., also a form of epilepsy and other nervous diseases, hysteria, and the like.

In concluding this rambling paper, I wish to express my appreciation for consultations with Drs. A. A. Stephens, W. A. White, and Russell L. Cecil, well-known authorities and writers as well as professors in some of our standard medical colleges.

1438 *Columbia Road, Northwest.*

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*[Symposium on Breast Cancer]*

## ANATOMY OF THE BREAST.*

HARRY M. HAYTER, M. D., Abingdon, Va.

The breasts, or mammary glands, are accessory glands of the generative system. They exist in the male as well as in the female; however, in the former only in the rudimentary state, unless their growth is excited by peculiar circumstances. Growth is slight but progressive in both sexes until the time of puberty when they suffer regressive changes in the male. In the female they continue to grow and become active in the event of pregnancy. The size and dimensions of the breasts differ in different individuals, in different periods of life, and in different physiological states. They increase during pregnancy and lactation, and become atrophied in old age. The shape of the virgin breast is due mainly to its adipose tissue and not to its glandular structure. During lactation the fatty portion of the breast may disappear and leave it apparently in a shriveled condition, yet such a breast may be functionally quite active.

The breast is composed of glandular tissue, fibrous tissue, and fatty tissue. It lies imbedded in the superficial fascia. It is separated from the fascia covering the pectoralis major, serratus anterior, rectus abdominis, and obliquus externus abdominis by loose connective tissue. It may extend horizontally from the fifth interspace in the mid-axillary line not only to the sternum but beyond, so that it overlaps the latter, and vertically from the second rib to the sixth or seventh intercostal space. The posterior portion of the fascia which constitutes the capsule of the mammary gland is much denser than the remainder of the capsule, and tends to prevent the extension of interstitial abscesses into the submammary space. The deep layers of the fascia are firmly attached to the periosteum of the sternum and the deep fascia of the pectoralis, thus forming the intermammary sulcus and preventing infection from spreading across the mid-line.

The breast is developed partly from the mesoderm and partly from the ectoderm,—its blood vessels and connective tissue being derived from the former, its cellular elements from the latter. Its first rudiment is seen about the third month in the form of a number of small inward projections of the ectoderm, which invade the mesoderm.

The mammary glands may be regarded as modified sweat glands. The secreting structure consists of fifteen to twenty lobes, each of which is of itself a branched saccular gland whose lactiferous duct opens on the surface of the nipple near its apex. The main lactiferous or lobar ducts subdivide in an arborescent manner into many interlobular ducts, about which are clustered the groups of secreting alveoli, each group forming one of the many lobules included in a lobe of the gland.

The fatty tissue covers the surface of the

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gland, and occupies the interval between its lobes.

The fibrous structure of the gland envelops the adipose tissue and glandular structure. It is a continuation of the fibrous septa of the superficial fascia. These septa are attached to the skin above, envelop and pass between the fatty and glandular lobules, and form a thin covering for the under surface of the gland. This fibrous tissue follows largely the ducts; hence, when affected with carcinoma, it contracts and draws the nipple in. The fibers that go to the skin, acting in a similar manner, produce the characteristic dimpling of the skin in carcinomatous involvement.

The nipple, located below and to the inner side of the center of the gland, has connected with it some circular and longitudinal unstriped muscular fibers. The longitudinal ones are attached to the lactiferous ducts and serve to retract the nipple, the circular ones to erect it. The nipple is surrounded by the areola. It is pink in the virgin. After pregnancy its hue becomes brownish. The tubercles of Montgomery are the numerous elevations found on the areola. They are modified sebaceous glands and enlarge during pregnancy. There is no fat in the nipple or areola.

The nerve supply of the breast and overlying skin is derived from the descending branches of the cervical plexus, by thoracic branches of the brachial plexus, and by the second, third, fourth, fifth, and sixth intercostals.

The breast is supplied with blood from above by the pectoral branch of the acromial thoracic artery. From the inner side come the perforating branches of the internal mammary artery from the second to the sixth rib. To the outer side and below is the long thoracic artery. The intercostal arteries also contribute to the blood supply of the gland.

Of far more importance than either the nerve or blood supply is the lymphatic supply of the breast. In general, it consists of a deep set around the lobules and ducts, and a superficial set which, together with the deep lymphatics, forms a plexus around the nipple called the subareolar plexus. They drain mainly toward the axilla into the lymph-nodes along the edge of the pectoralis major but also communicate with the nodes around the subclavian artery, in the apex of the axilla, the subscapular nodes, and the supraclavicular nodes. Minute lymphatic vessels extend across the sternum, uniting the lymphatics of both breasts. Other lymphatic chains follow the course of the intercostal arteries, and possibly the branches of the internal mammary artery, thus communicating with the nodes in the anterior mediastinum; and still others extend along the sheath of the rectus abdominis, entering the peritoneal cavity by way of the umbilicus and ligamentum teres.

There is an intricate network of lymphatics on the surface of muscle and on the upper side of fascia. The direction of the lymphatic current is from the muscle to the fascia; however, once the lymphatics of the fascia are involved by a carcinomatous growth, the path for direct extension to the muscle is clear.

## CANCER OF THE BREAST—GENERAL PATHOLOGICAL CONSIDERATIONS.*

HARRY W. BACHMAN, M. D., Bristol, Va.

This paper is presented as that part of a symposium on Breast Cancer which considers its pathology, and, for reasons of practicality, it is obvious that the writer must limit himself to discussion of a few things that are known of the subject rather than allow himself to be led into theoretical considerations. He shall, therefore, entirely omit reference to theories of the cause of cancer. There will yet remain to him the manifestations and effects of cancer about which a great deal that is useful can be said.

Fundamentally the term cancer refers to a single cell. It derives its ultimate source from the original germ cell of the individual and its more immediate source from cells whose appearance and behavior are apparently normal. The cancer is an atavistic cell and we call it malignant because it disregards laws that govern growth and function in normal cells. It conducts its activities without regard for the integrity of other cells and itself serves no useful function to the organism. Figuratively it is a criminal and from the start it is destructive. In the early stage cancer is always localized and small. If, therefore, cancer can be recognized in this early stage it may be destroyed and the individual, as one says, cured, provided it is accessible and provided its destruction does not involve destruction of the individual. Therein lies the hope and the difficulty of the situation. Until the cause of can-

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cer can be identified and its operation brought under control, search must continue for methods to permit earlier diagnosis.

Collectively, cancer as a cause of death is 50 per cent more common today than it was thirty years ago. At present cancer is responsible for one out of every 1,000 deaths occurring in the general population of men, women, and children. If one considers cancer of the breast alone, the same 50 per cent increase in the last thirty years is noted and today approximately nineteen out of every 100,000 of the entire adult female population will die this year of cancer. Cancer of the breast comprises about 11 per cent of all cancer, as suggested in a review of 5,080 cases of malignant disease at the Hospital of the New York State Cancer Institute in Buffalo (Schreiner and Stenstrom). From Pennsylvania, however, Wood gives this figure as about 8 per cent, so that one may compromise and say that perhaps 10 per cent of all cancer deaths are due to cancer of the breast. Probably not many of us have seen cancer in the male breast. It is involved in about 1 per cent of all cases as suggested in a collective review by G. W. Taylor covering 8,354 cases of breast cancer. This same review in 1932 also shows the greatest incidence of breast cancer to be between forty and fifty years of age, and that 62 per cent of all cases occur in the fourth and fifth decades of life as compared with 15 per cent in the third and sixth decades, respectively. An interesting observation on breast cancer relates to marital status and reproductive activity. Most women having cancer are married for the simple reason that most women are married, but Lane-Claypon, Semb, and others in analyzing the cancer population have found that, while 11 per cent of the normal female population is unmarried, 18 per cent of the cancer population is unmarried. The conclusion, therefore, is possibly valid that sexual activity and reproduction confer some protection against breast cancer, and this conclusion is further supported by Semb's figures showing a relatively greater incidence of sterile marriages with small families among women with breast cancer as compared with women free from such cancer.

When one turns to manifestations of the pathology of breast cancer it is essential to bear in mind that any localized breast tumor in a woman over twenty years of age may be carcinoma. In such the diagnosis may be evident only after microscopic study, and the clinical significance of this fact is obvious. In other words, cancer may appear as a simple lump indistinguishable clinically from a benign growth. Admittedly, however, the commonest form of breast cancer is the scirrhous carcinoma, small, hard, with ill-defined limits, the cut surface showing the coarse, white, gritty, structure with irregular coarse columns radiating into surrounding tissue. The medullary carcinoma is larger, softer, grows more rapidly and is more apt to be associated with enlargement of the breast. Recently a case of comedo carcinoma, carcinoma arising from ductal epethelium, came under the writer's observation. The contour of the breast was grossly deformed by a nodular mass beneath intensely red skin. Its appearance suggested impending ulceration. The cut surface showed an irregular tumor, the solid portions of which were broken by a few cystic areas filled with thin mucoid material, and when the tumor was squeezed it was possible to express cheesy matter from the cut surface similar to a discharge from a comedo on the face. Bloodgood also describes the cancer cyst, the malignant nature of which is grossly betrayed by the presence of bloody fluid content and microscopically by the finding of an area of cancer in the wall. Sir James Paget described a form of carcinoma that occurs in the nipple, characterized by a chronic scaling or eczematoid ulceration which is not relieved by mild disinfectants and protective dressings. Microscopically this is an epidermoid carcinoma which results in involvement of the breast as serious as the more common forms.

Perhaps the most interesting part of the story of breast cancer relates to its involvement of the lymphatics, and the story would lose much of its color if the names of certain ones who have contributed to its knowledge were left out. D. Hayes Agnew, one of the great figures in American surgery, died in 1892. William Stewart Halsted quoted Agnew as having said to him shortly before Agnew's death that he had never cured a case of breast cancer. Local or regional recurrences or metastasis explained Agnew's remark. Bloodgood is the author of the statement that the technical and anatomical adequacy of the operation as perfected by Halsted has not been surpassed today. Halsted's operation remains the best that surgery alone has done. The advances from Agnew's era in 1875 to the time of Hal-

sted's operation were along the lines of discoveries in pathology. This leads one back to other great names in surgery. In 1875 the German, Volkmann, observed that his operative results were better in cases that had involvement (metastasis) in the pectoralis major than in those without this degree of involvement. In other words, the advanced cases did better after operation than did cases that were seen earlier. In the one group, those with muscle involvement, he removed the involved pectoralis major while in the more favorable cases seen earlier it was not then his custom to remove this muscle. In studying his specimens microscopically it was Volkmann who observed cancer cells in the fascia covering the pectoralis major muscle, "even when the tumor was freely movable and a thick layer of fat remained interposed between the tumor and the fascia." This led Volkmann, as he said, to cut right down on the pectoralis muscle and clean its fibers as he would for a classroom dissection as a part of his routine operation. At this time Volkmann on occasions removed one or even both of the pectoral muscles, and it was about this time that he and his contemporaries recognized the fact that the axillary nodes were usually involved even when they could not be felt, and he suggested that it might be well to explore the axilla in every case. The first, however, to advocate systematic cleaning out of the axilla was the German, Kuster, who reported his cases between 1871 and 1885.

In America, however, the genius of Halsted was at work. Not only did he confirm Volkmann's observation of cancer cells in the fascia of the pectoralis major, he found them in the fascia between the pectoralis major and minor as well, and it was but a step from this to his doctrine of the centrifugal spread of cancer by way of the lymphatic plexus in the fascia covering the pectoral muscles. Halsted did not report his perfected operation until 1890 when it appeared in the *Johns Hopkins Hospital Reports*, but as early as 1882 one finds that he was routinely cleaning out the axillary space and in almost every case removing the pectoralis major. In the complete operation that he eventually described, he was removing both the pectoralis major and minor as well as cleaning the axilla and supra and infra clavicular spaces.

Another figure whose contribution will probably prove of lasting value is that of W. Sampson Handley, of London. Handley, writing about seventy-seven cases in 1927, said that he did not believe enlargement of the axillary glands is in itself a lethal factor, for recurrence in the axilla is rare after an efficient operation. He emphasized, however, that by the time the axillary glands are enlarged the disease has frequently and perhaps usually obtained access through the inner ends of the intercostal spaces to the nodes lying along the internal mammary artery, and that quite early and in still operable cases these glands contain microscopic deposits of cancer cells. He supported his contention by reporting that the use of radium in the intercostal spaces over these nodes post-operatively prevented recurrence in these areas in all but five instances, and in four of these the recurrence was at a site below that where radium had been used. Thus we may sum up the work of Volkmann, Kuster, Halsted, Handley and many others by saying that breast carcinoma disseminates itself by way of the deep lymphatic plexus to involve the supra and infra clavicular lymph nodes, the inferior, middle and superior axillary nodes and the nodes lying along the course of the internal mammary artery. But this is by no means the extent of metastasis in breast cancer. Visceral involvement, particularly to the liver by way of the round ligament, and to the lungs, is common, and the skeleton is frequently attacked. Distal to the elbows and knees the bones escape cancerous invasion except in rare instances. Subcutaneous nodules of cancer occur almost as widely as metastasis to bone. The mechanism of this remote metastasis has received much discussion. Handley has strongly supported the adequacy of the theory of lymphatic dissemination, but Schmidt found minute cancerous emboli in the terminal pulmonary arteries in all of fifteen cases of abdominal carcinoma coming to autopsy. Thompson and Keiller found widespread metastasis without lymphatic involvement, and concluded that dissemination can occur by way of the blood stream. Schmidt holds, however, that most cancerous emboli become encapsulated and degenerate, and thus become harmless.

Certain biological features of the cancer cell influence the prognosis in breast cancer. One refers here to Broder's grade, or index, of malignancy. Carcinomas composed of cells which are highly undifferentiated, with no tendency to assume any regular architectural

arrangement, comprise his grade IV, and in these widespread and rapid metastasis occurs and the prognosis is rendered more unfavorable thereby. Those composed of cells which more closely resemble normal cells in arrangement and appearance are his grade I, and in these the prognosis is relatively more favorable. Time and experience seem to be confirming the validity of Broder's observations.

## CANCER OF THE BREAST—SYMPTOMS AND DIFFERENTIAL DIAGNOSIS.*

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### Symptoms

In approaching a discussion of the symptoms of cancer of the breast, let us first recall some facts about cancer in general, and then consider the particular symptoms to be looked for in suspected cancerous involvement of the breast.

Cancer is at its beginning a local disease. Sooner or later, through the peculiar property of metastasis it becomes more widespread, often resulting before death in a generalized carcinomatosis.

Time was when the only decision confronting the physician in most cases of cancer was whether the condition was operable or inoperable. The emphasis placed on instructing the public as to the symptoms and treatment of cancer in late years has made the laity consult physicians more frequently and much earlier with regard to suspected cancers. This has increased the physician's responsibility and has complicated his duty to these patients. He must know a great deal more of the differential diagnosis of cancer than was formerly necessary, and his advice must be directed towards preventing the development of cancer when it is not already present, and towards the most efficient and complete control of it at the earliest possible moment when it is found.

The breast conditions with which we have to deal fall naturally into three groups: In the first group are those conditions that are frankly and certainly benign; in the second, those conditions that are equally frankly and certainly malignant; while the third group comprises that large number of cases occupying the border-land between these two.

The first group offers no serious problem—if the condition be, for instance, a simple cyst or a fibroma, its excision will effect cure.

The second group is also easily disposed of. The old question as to operability must be decided, using the X-ray to determine possible intrathoracic or osseous metastasis, and careful abdominal examination to determine whether metastasis has occurred in the liver or other intra-abdominal organs. We must decide whether our treatment shall aim at cure or mere palliation of the condition present.

It is the large intermediate group, neither frankly benign nor certainly malignant, that gives us our chief concern. The diagnosis rests upon a very complete history; a careful physical examination, or perhaps repeated examinations; and, as a last resort, microscopic examination of the suspected tissue obtained by biopsy.

Certain predetermining or predisposing factors claim our attention in considering the symptoms of breast cancer: *Age.* We are accustomed to think of breast cancer as a disease of middle life, and certainly most cases do occur between the ages of forty and sixty. Middle age and its associated condition, the menopause, predispose to cancer, but it is a great mistake to believe that cancer of the breast is rare before forty. It is also usual that the younger the subject, the more deadly the disease. We should never rule cancer out merely because of the patient's age. *Sex.* Cancer of the breast is overwhelmingly more frequent in women, because the male breast is not a functioning organ. However, from 1 to 3 per cent of all breast cancers have occurred in men. *Heredity.* The influence of heredity in cancer is still a disputed point. In general, where we find a number of cases of cancer occurring in one family we are justified in adding another link to our chain of suspicion that the individual in question is suffering with cancer. *Pregnancy and Lactation.* The role of previous lactation is also indefinite. Breast cancer occurs most often during the years when the breast is most active, whether the woman has borne children or not. It is certainly true that the influence of pregnancy and lactation on a cancer already present renders the condition practically hopeless. *Trauma.* The factor of trauma has been widely discussed. The development of a tumor from a single trauma must be extremely rare, if it ever has occurred. If we consider the effects of chronic irritation as trauma, the relation-

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ship comes closer. Breast cancer may develop in a scar following drainage of an abscess. *Chronic Cystic Mastitis* furnishes an example of this type of trauma which may result in cancer. This is especially the case where there are intracystic papillomata. Probably not more than 10 per cent of the cases of chronic cystic mastitis eventuate in cancer, but cancers have developed in breasts from which areas of cystic disease have been previously removed by a plastic operation, and it certainly seems much safer to remove the breast if this condition is generalized throughout it, accompanied by more or less induration.

The chief symptoms and findings of cancer of the breast may be illustrated by describing a typical case. The patient is usually a woman who states that she accidentally discovered a lump in one of her breasts some time before she presents herself for examination. If the lump is large and has been present for a considerable while, she may say that she has become aware of the increased weight of that breast. If there is a large amount of fibrosis and contraction of fibrous tissue present, the breast may stand out more prominently from the chest wall and the nipple may be at a higher level than before. Usually the growth is painless, but if it occurs in an existing chronic mastitis, as is sometimes the case, periodic pain will be present. Occasionally it is true that pain precedes the development of the tumor by months, and in such a case a careful watch should be kept for the earliest signs of development of an indurated mass. The tragedy of cancer of the breast lies in the fact that the lump is so often completely symptomless, and the woman waits for some change in it before consulting her physician. It is hard for her to believe that a condition causing no discomfort may be serious. Either because she is sure it does not amount to anything, or because she fears to know the truth, she procrastinates and puts her life in jeopardy.

On examination, if the case be early, there will be found a rather hard, firm, ill-defined mass, not adherent to the skin or to the underlying tissues. A fully-developed cancer will present retraction of the nipple, fixation and dimpling of the skin, a large, fixed tumor, and involvement of the axillary and other lymph nodes with carcinoma. Such findings as ulceration of the overlying skin, cachexia, generalized pain, intra-abdominal or other distant metastases, are not symptoms of breast cancer, but of approaching death. One must keep in mind that while cancer of the breast is almost always manifested by a single lump, it is not impossible to have a benign and a malignant tumor present at the same time. The other breast should always be carefully examined also for two reasons,—first, because bilateral cancer does occur (though only in advanced cases); and, second, in order to get a clearer idea of the patient's normal.

Discharge from the nipple accompanies from 3 per cent to 5 per cent of the cases of carcinoma of the breast. While bloody discharge may occur in other conditions, it should always excite suspicion of cancer, even in the absence of other signs. The patient should at least be kept under observation until the correct diagnosis can be made.

Let us remember that cancer is primarily a local disease. If seen early, before the axillary and other lymph nodes are involved, it may be impossible to differentiate from a simple tumor. In such a case, the only certain way in which the diagnosis can be made is by examination, macroscopically and microscopically, of the growth itself. While excision of the growth may not be without danger, the concensus of informed opinion seems to be that the value of the information thus obtained outweighs the danger risked in obtaining it. It should be added that the one who excises the growth must be able to tell cancer from other growths and must be prepared to proceed at once with the radical operation, if cancer is proved to be present. The risk of disseminating a cancer is probably lessened by avoiding squeezing or pulling upon the growth while removing it, and by removing it surrounded by a wide margin of normal breast tissue.

### Differential Diagnosis

Cancer of the breast must be differentiated from abnormal involution (called also cystic disease of the breast, chronic cystic mastitis, cystadenoma, or Brodie's disease) benign fibro-epithelial tumors, sarcoma, tuberculosis, syphilis, simple cysts, and rarely from chronic pyogenic mastitis and actinomycosis.

*From Abnormal Involution.* It may be impossible to differentiate between these conditions in the earlier stages. In a well-marked case of abnormal involution its widespread nature, frequent bilateral occurrence, cysts, pain, and greater sensitiveness on pressure,

with absence of dimpling of the skin or attachment to the pectoral fascia will disclose its nature.

*From Benign Fibro-Epithelial Tumors.* These usually occcur in younger subjects than do carcinomata. If not infected, they are freely movable, well-defined, encapsulated, round and lobulated. They have an even, firm consistence. If cystic, these findings may be modified. Usually there is no retraction of the nipple or axillary involvement. Intracystic papilloma usually gives bloody discharge from the nipple and so frequently undergoes malignant change that biopsy is advisable where this condition is present.

*From Sarcoma.* Peri-ductal sarcoma grows rapidly, is encapsulated, multilobular, soft and frequently cystic. The skin is not attached unless the tumor is about to ulcerate, so that it is freely movable. The veins over the growth are dilated. The axillary nodes are not involved. The sarcoma arising from the breast stroma may be impossible to differentiate at first. It is very rapid in its growth, usually occurs in young women, and causes no axillary involvement.

*From Tuberculosis.* Typical tuberculosis of the breast runs a rapid course. It is usually secondary. There are early fistula formation, early involvement of the lymphatics, localized tenderness and pain. Tubercle bacilli may be found in the discharge. Ulceration may be extensive but does not resemble cancerous ulceration. In the acute disseminated nodular type sometimes occurring during lactation the nodules are scattered throughout the breast. The sclerosing variety presents a mass which, in the absence of abscess formation, resembles cancer closely. This is not a rare form of the disease. The pre-operative diagnosis is uniformly cancer.

*From Syphilis.* Syphilis and cancer may co-exist. Chancres, tubercular syphilides and gummata resemble cancer. The Wassermann test, the examination for the treponema pallidum, and the therapeutic test will usually lead to the correct diagnosis. The therapeutic test is probably best used where there are positive or suspicious blood findings. If the tumor does not yield promptly (within two or three weeks) to antisphilitic treatment, it may be safer to operate.

*From Simple (Retention) Cysts.* These single cysts are rounded, smooth, freely movable, elastic, rarely tender, do not infiltrate their surroundings, or adhere to the skin or pectoral fascia, or cause retraction of the nipple. Galactoceles often impart a doughy feeling on palpation and may pit on pressure. It is well to remember that malignant change may take place in the walls of these cysts, and that excision of them is the wisest course.

*From Actinomycosis.* This is too rare to merit discussion. The diagnosis has never been made until elimination of all other diseases causes search for the ray fungus.

*From Chronic Pyogenic Mastitis.* Circumscribed areas of chronic mastitis, without tenderness or softening, can resemble scirrhus cancer so nearly as to be impossible of differentiation without operation. Such a case presents sclerosis as its predominant characteristic, often with retraction of the nipple, adherent skin and axillary involvement. Usually it is possible to elicit the history of a more or less acute stage of the disease which will give a clue to the diagnosis.

It may make the diagnosis of breast cancer somewhat less difficult if we recall that a great majority of all single tumors occurring in the breast after the age of forty are cancer, and if we look on every single tumor occurring in every breast as a possible cancer until it is proved to be benign. It may also help to keep in mind the natural history of this disease, and to make frequent subsequent examinations if the condition is not clear-cut when the patient first presents herself. In such a case, early exploration will disclose the true nature of the condition and may save a life.

## TREATMENT: X-RAY AND RADIUM—END RESULTS.*

J. T. McKINNEY, M. D., Roanoke, Va.

From a careful review of available literature and study of the records of many clinics, together with an analysis of our own results in carcinoma of the breast, it is our opinion:

1. That all operable cancers of the breast should be referred for surgery at the earliest possible time.

2. That in advanced cases with axillary and glandular involvement, even though in the presence of ulceration, the breast tumor should be removed.

Some of the newer methods of pre-operative diagnosis of lesions of the breast by means of

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roentgen-ray studies of both breasts do not come within the scope of this paper, nor does the question of the type of the operation, whether simple excision or radical removal, properly belong in this part of the symposium.

It is advisable in all cases, and especially if there is glandular involvement, to X-ray the chest for metastasis, as well as portions of the skeletal system, particularly if constant pain is present. This cannot be too strongly emphasized, for often a patient who complains of rheumatism, neuritis or lumbago already has bone metastasis, and it is obviously useless to subject this patient to a mutilating operation. Metastasis to the bones occurs later than pulmonary metastasis, but is next in frequency—usually one bone is affected, though there may be a widespread involvement present.

The following is the frequency of metastasis to the skeletal system that we have observed in a series of fifty-four cases of post-operative cancer of the breast which we have had under observation for the past six years:

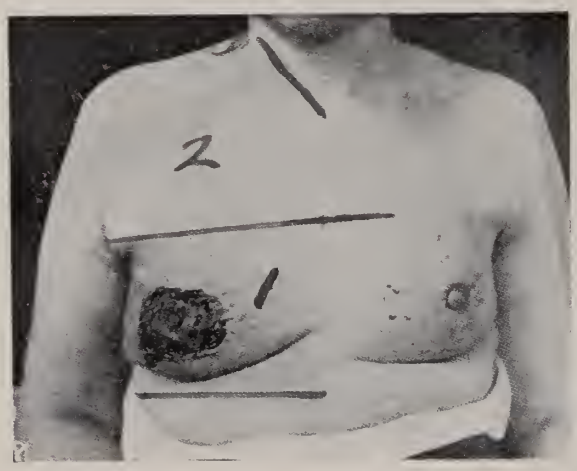


Fig. 1.—Areas for X-ray therapy.

1. Bodies of the vertebrae, usually the lumbar (six cases). The pain is most intense, probably causing more suffering than metastasis in any other portion of the body.
2. Pelvic bones, near the acetabulem (one case).
3. Femur (two cases).
4. The ribs—multiple (one case).
5. The skull (one case).

The humerus, clavicle and long bones of the extremities are rarely involved.

In this series there have been eight known cases of metastasis to the lungs.

Frequent modifications in the technique of X-ray treatments have been made, and differ considerably with the roentgenologist. While we have in the past treated cancers of the breast pre-operatively, it is not our present routine. Following surgical removal, we begin post-operative X-ray therapy as soon as practical, usually ten days to two weeks after the operation. Five areas are treated:

1. The mammary—in front.
2. Supra-clavicular.
3. Mammary from the side.
4. Axillary.
5. Upper part of the chest posteriorly, radiating the axilla and supra-clavicular regions.

Before the advent of high-voltage machines our factors were 135,000 peak KV, four to six millimeters of aluminum filter, fifteen-inch target distance, twenty-five to thirty minutes exposure time. Treatments are given at intervals of two to three days. We usually repeat this series in three months and frequently give another series six months later, keeping the patient under close clinical observation for a period of at least two years. No definite routine or standardization for all cases can be made. The size and age of the patient, the amount of axillary and mammary fat, the glandular involvement present and the appearance of recurrences all enter into making each case a subject of special study.

Our results following the use of the higher voltages, 200,000 KV, delivered from the new type valve tube rectification transformer with the Westinghouse therapy tube, 50 cm., S. F. D. .5 mm. cu., 1 al filter, 5 MA., giving an erythema dose of 800 to 900 R. to the areas outlined above have given somewhat better results, there possibly being fewer local recurrences. In very obese patients and in treating the upper posterior chest and axillary areas, the higher voltage with heavier filtration has some advantages over the lower voltage technique, and should be used. However, when carefully carried out, it is doubtful if the results obtained are much superior to the 135,000 KV technique. This, at least, is substantially the opinion of DesJardins at the Mayo Clinic, Herendeen of the Memorial Hospital in New York City, and many other capable men. The amount of absorption of the X-rays is the important thing, and I believe the more frequent repetition of treat-

ments, using the lower voltages, possibly tends to prevent recurrences and metastasis.

In metastasis to the skeletal system as well as to the lungs, great relief from pain can be accomplished by radiation. The 200,000 KV technique for treating metastasis to the skeletal system is more efficient than X-rays of low voltage. In all treatments of the breast, the skin tolerance dose should be kept in mind, and, if this is done, too much radiation with severe reaction should not occur. Occasionally pulmonary fibrosis is seen to follow excessive cases. Where glandular involvement is present the average percentage of five-year cures is 5 per cent, though a few of the European writers report as high as nineteen per cent. An analysis of fifty-four operable cases recently studied in our series vary little from the above.

Opinion as to the use of radium in the treatment of cancers of the breast is widely at variance. Some excellent clinics use radium packs, others interstitial irradiation, and still other operators place radium directly beneath the skin flaps, burying it in the tissues at the time

Fig. 2.—Areas for X-ray therapy.

radiation for mammary cancer. However, careful attention to technique should make this an infrequent complication.

Ewing has pointed out in sections made following radiation, that there is an engorgement of the blood vessels, a lymphocytic exudate, with hydropic degeneration, and vacuolation of the tumor cells, hyperchromatism of the neuclei, and granular detritus in the connective tissue. Later, the blood vessels show an obliterative endarteritis, with marked increase in the connective tissue and decrease in the number of cancer cells.

Statistics generally show where early operation has been performed and radiation has been carried out, and where no glandular enlargement was noted or found to be present at the time of operation, that five-year cures can be expected in from 75 to 80 per cent of of operation. The time of application in the hands of most radiologists or surgeons is usually following operation, though occasionally radium is used pre-operatively. When radium is used, X-ray therapy is in the large majority of instances combined with it.

Dr. Burton James Lee, Quimby, Pack, and their co-workers at the Memorial Hospital in New York City have within the past few years done some excellent work with interstitial irradiation. Their observations and conclusions have changed from time to time, but in their latest published report from the *Archives of Surgery*—1932, they advise for primary operable mammary cancer external X-ray treatment, then interstitial irradiation, and, finally, radical amputation six weeks later. They are now grouping their primary operable cancers of the breast into three groups for the pur-

pose of evaluating the different methods of treatment:

1. Surgical intervention alone.
2. External and interstitial irradiation, followed by surgical intervention.
3. Irradiation alone.

At the Lewis-Gale Hospital we have used radium in some of our cases, but do not advocate it routinely.

We do consider, however, that the use of the electric knife is a definite advance in technique, which will probably lessen recurrences and metastases.

Dr. Francis Carter Wood, Director of the "Crocker Institute of Cancer Research," Co-

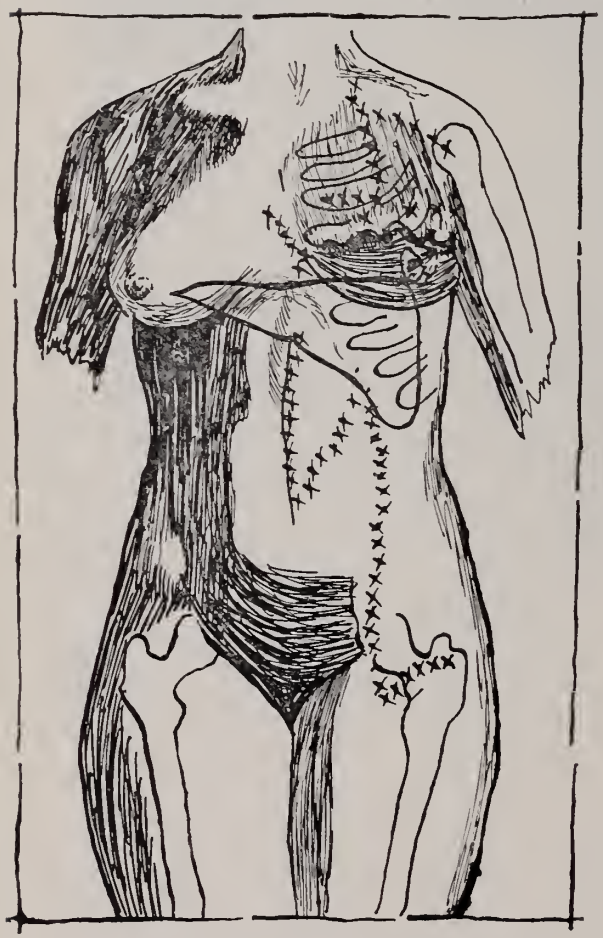

Fig. 3.—Illustration showing lymphatic drainage from cancer of the breast with most frequent sites of metastasis.

lumbia University, New York City, in a personal communication of a few days ago, says: "I am not convinced that the insertion of radium in any form in the breast is an effective method of treatment: certainly everyone realizes that even though the patient may be clinically well after extremely heavy radiation, viable cancer cells will be found on careful examination."

## Summary

1. We believe all operable cancers of the breast should be removed surgically.

2. Even in the inoperable group with glandular involvement the tumor should be excised.

3. We feel certain that post-operative X-ray therapy properly carried out for each individual case lessens local recurrence and metastasis and prolongs the life of the patient.

4. As generally applied, we do not advocate the use of radium, but, if used, we feel a course of previous X-ray therapy should be given previously to the radium implantation.

5. Continued education of the laity to seek early examination and treatment for all lumps or nodules noted in the breast will greatly lessen the mortality from cancers of the breast.

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*Medical Arts Building.*

## TREATMENT BY OTHER METHODS, WITH RESULTS.*

HUGH H. TROUT, M. D., Roanoke, Va.

To be given the title "Other Forms of Treatment with Results" is, at best, a difficult assignment, but, when one does not know to what extent "Other Forms of Treatment" are to be discussed, then this title becomes an impossible task. In looking over the program, the most striking omission is the absence of any mention of the Surgical Treatment of Carcinoma of the Breast, and this, after all is said and done, is the most important single aid in our attack on this disease.

I believe the best way for me to approach this problem is to state what I believe would be the method in which I would handle a case of carcinoma of the breast just as if the patient were making her first visit to my office. Of course, we are assuming that the diagnosis of carcinoma of the breast has definitely been made, as has already been outlined in this symposium.

I am sure the first problem to be solved is to ascertain as far as possible if the case is operable or inoperable, but, I would also try to estimate the patient's mental reaction and intelligence. If the patient is sufficiently intelligent to have control of her mental reactions, I would inform her quietly of the serious nature of her trouble, but at the same time, impress upon her that with her cooperation her chances of a cure are good. If the patient was not intelligent and was "nervous," I would say nothing about pre-operative irradiation. I have had some rather distressing experiences with pre-operative irradiation. Some of the patients who have had such treatment and been temporarily improved by such treatment, take the management of the case in their own hands, and the next time I have seen these cases they have reached the inoperable and hopeless stage of the disease. This is a real and not a fanciful complication in the management of these cases.

If the patient's mental condition is such as to even raise the question to my mind that I will not have her intelligent assistance, then I do not mention anything about pre-operative irradiation.

"Cancer phobia" is another real condition that needs serious consideration. Recently, in a certain medical center, a surgeon obtained the services of a psychiatrist to straighten out the mental condition of the surgeon's carcinomata cases after the surgeon had "talked over the situation" with the patients. "Time" summed up the report of this situation by remarking, "It has become a question of whether to let people die cancerous and sane, or witless from suspicion of cancer." With tact, honesty and intelligent management "cancer phobia" can be made to disappear.

When one realizes that cancer is now the second in frequency among the causes of death and even contests with "heart disease" for the first place, it is time for all of us to feel worried. However, we medical men should be able to not over-emphasize this condition. I believe the patient should be told very clearly and honestly what the surgeon thinks her chances of a cure are, and, of course, this largely depends on how early the surgeon sees the case. If this one fact—the earlier the case is seen the more certain will be the cure—is sufficiently impressed upon the patient, such education will go a long way toward solving the cancer problem. We should all recall the slogan of the American Society For the Control of Cancer—"Fight Cancer With Knowledge."

Of course, we all agree that education, radical surgery and irradiation furnish the tripod on which our hopes rest in the cure of cancer, at least until the time comes when the cause of this disease is finally and definitely known. The meaning of "radical surgery" varies but little in the estimation of different surgeons. It means to my mind the complete removal, in block dissection, as far as possible, of the mammary gland, both pectoral muscles, sheath of the rectus muscle and a thorough "cleaning out of the axilla" without unnecessary traumatizing the tissue during the operation,—in other words, the so-called Halsted operation.

In an editorial by Emile Holman, in *S. G. and O.*, November, 1932, he stresses the danger of repeated examinations of the carcinoma of the breast cases, thereby increasing the danger of invasion by the way of the lymphatics and blood stream. As early as 1880 Wrigert demonstrated microscopically that cancer cells directly invade the walls of blood vessels traversing the tumor. Schmidt found emboli of cancer cells in the small pulmonary arteries without macroscopic evidence of involvement of the lung. Holman further expressed the opin-

*Read before the Southwestern Virginia Medical Society, at Pulaski, March 24, 1933, as a part of the Symposium on Breast Cancer.

ion that the "treatment of cancer is an emergency measure about as compelling as appendectomy for acute appendicitis since it is fraught with even greater danger. A cancer cell, hanging on the brink of a swiftly moving blood stream may be broken off at any moment and carried beyond reach of effective treatment. Numerous circumstances may hasten this ultimately fatal incident. Massage, the application of heat, iodine or salves can serve only to increase the hazard of embolic metastases and to multiply completely any later attempts which may be made to control the disease."

Tyzzer has demonstrated that repeated massage of malignant tumors in mice doubled the number of metastases outside of the original tumor. This, as well as much clinical evidence, should make us realize the necessity of gentle and not frequent examinations of a case of carcinoma of the breast. We should not be guilty of blaming too severely a patient for "feeling her breast" frequently when we insist on numerous examinations by medical students in our clinics. Let's be consistent in this and examine our breast cases gently, and if we are suspicious of malignancy see that proper treatment is instituted without delay.

In a recent report from a large teaching hospital only 12.2 per cent of 573 patients lived ten years or more after operation, while in a hospital where very few examinations were made reports showed 44 per cent living ten or more years, and over 13 per cent of these with axillary involvement lived that long.

There are various types of incisions for the operation in the radical removal of the breast, but, of course, the incision should be made to fit the individual case. Dr. Halsted used to say he felt the surgeon who was going to sew up the incision should not be allowed to make the incision, for, in this way, no attempt would be made to save skin. In other words, the incisions should be made so as not to come anywhere near encroaching on the tumor.

Whether this incision should be made with cold knife, the "radio" knife, or the hot cautery depends largely upon the ability of the surgeon to employ successfully these last two electrical additions to the surgeon's armamentarium. As an example of what I mean, my partner, Dr. A. P. Jones, employs the so-called "radio" knife to make his skin incisions and checks the hemorrhage by simply touching the handle of the clamps with the point of the electrical needle. In this way he eliminates much buried suture material. Of course, he ties the larger vessels. I personally have not been able to make the skin incisions with the "radio" knife with much success, and "cleaning out" the axilla with a hot blade near the axillary vessels does not add one thing to my comfort, for I can't help but think of what might happen were the cautery to burn a hole in the vein or artery. However, there is no question that controlling the hemorrhage by touching the handle of the hemostat with the tip of the electrical unit saves time, lessens the amount of suture material buried, and is safe. Another point of which I am certain is that were I able to use the "hot" cautery in the wonderful manner with which Dr. A. C. Scott employs it, I would also use the same.

The excellent healing of the skin edges after having been severed with a cautery surprised me greatly, but in the few cases in which I have tried this method, I have not been as successful as Dr. Scott.

After doing as complete and as radical removal as is possible, then we add one more factor to aid us in our fight against local recurrences. This is by the addition of radium placed under the skin, properly protected and withdrawn after the correct dosage has been given. Most radiologists and pathologists agree that carcinoma of the breast is more radio-resistant than epithelioma, and that in order to make radium effective it is best given in the interstitial manner. The placing of the radium in the line of the internal mammary vessels and in the axilla meets such a condition. In this way, the radium is buried under the skin and in a field in which there might be some cancer cells left and within reach of the irradiation.

Recently there have been many articles decrying the indiscriminate distribution of radium emanations to doctors who have not studied the dangers of this element, and all of us have seen some bad results from such practice. I am sure, unless the radium is properly screened and removed as soon as the correct dosage has been given, much harm will be done. This can only be estimated by someone who understands the physics of this useful and dangerous surgical adjunct.

In about ten days after operation, irradiation with a 200,000-volt machine is started. This time is largely determined by the condi-

tion of the incision and the amount of radium employed at the time of operation.

To give the results of any form of treatment regarding death within a certain period of time is easy to do, but any such series is almost worthless when comparing with another method of management, for the two series may vary so markedly in the types of patients. For awhile it was thought by using the histological classification of Broders or the clinical index of Lee and Stubenbord that we might arrive at some arrangement which would be of comparative value. It was soon seen that the individual equation of the pathologist or clinician entered so largely into the question that neither of these methods could be depended on as a basis of comparison. However, either one of them is of prognostic aid, and in recent years we have been employing both.

I feel that any series of results which does not contain at least 75 per cent of replies to the "follow-up" is useless, for such a series contains many patients that are dead, and such cases are simply excluded from the series unless all cases failing to reply are estimated as having died, and such a method is manifestly inaccurate.

At the last meeting of the American Surgical Association, Matthews reported a series of 218 unselected cases, with 23.9 per cent surviving the ten-year period, and 37.8 per cent surviving the five-year period. The axillary glands were involved in 67 per cent of all these cases. Incidentally, in our series of 386 cases we have found a fairly large number of glands, that were removed from the axilla, were inflammatory, and did not show malignant invasion on serial sections. Also it has been very interesting to me to note that one large gland in the axilla apparently gives a better prognosis than numerous small hard, shot-like glands.

Up to this point we have been assuming that the case was one a surgeon could consider as being operable. Of course, the term "operable" varies with different surgeons, and, as a general rule, the more experience a surgeon has had with carcinoma, the less hopeful he will be concerning the prognosis. However, I think most of us feel the term "operable" means to apply to cases in whom we have a reasonable hope of curing without local recurrences or metastases. I recall far too large a number of cases in which operations have been done on the breast, when if X-rays had been taken of the skeleton, metastases would have been demonstrated.

We try to insist on routine X-ray examinations of the lungs and skeleton in every case of carcinoma of the breast before operation. As a result of this practice, we have been saved the mortification of adding a useless operative procedure to the discomfort of a patient whose body is riddled with metastases. Even if such an X-ray examination is not made as a routine practice, it should certainly be done if there is any pain in any part of the body. Perhaps I feel this point too keenly, for I recall operating on a doctor's mother for carcinoma of the breast, and before she left the hospital she complained of pain in the pelvis, and X-ray showed extensive metastases. Since this needless calamity we have made such X-ray examinations as a routine practice.

If a patient has no metastases, but has a tumor and glands that cannot be removed, what is the surgeon going to do about it? There is one school of surgeons who feel that nothing should be done to give these patients any comfort, but to return them to the localities from which they came, so that they might be object lessons—illustrating the dangers of delay.

I, personally, have never been able to wean myself from the old-fashioned idea that the physician's duty is to the individual patient who has every right to expect to receive the same advice and attention he would have were the patient and the doctor to trade places. One important point to remember in making a decision in these cases is to recall that cancer is not as active in old people as it is in younger folks. In other words, many a case of cancer of the breast in old people can be removed without recurrence,—often when the growth is large and ulcerating. In younger patients, such is not the rule. Irradiation is often of great aid in such cases, and occasionally a case which looks to be perfectly "inoperable" is made "operable" by the employment of properly given X-rays.

In 1921 I reported the apparent effect of pregnancy in the remaining breast after the first breast had been removed for carcinoma. We were not able to find a single case of pregnancy occurring in such a patient that did not develop a very active malignancy in the remaining breast. Of course, the practical application of this observation is to caution the

patients who might become pregnant after having had a cancer of the breast removed, to avoid future pregnancies. This is naturally a very limited number, for most of these cancer cases are well beyond the age of pregnancy.

As I have indicated, the analysis of any "results" of any series presents so many impossible factors on which to make any accurate deductions in comparing the virtues of one method with another that all such comparisons are practically worthless. However, we do know that the immediate mortality is low—usually under one per cent. I have often been impressed with the apparent ease and comfort with which many of the very old ladies stand operations.

Our own results have been divided in results of the entire group in periods of five, seven and ten years after operation. Out of the 386 cases, we have been able to "follow-up" 328 of these cases, or about 87 per cent of the entire series. From 1909 to 1920 there were 152 cases with 22 per cent free from recurrence or metastases after five years. During this period we only employed radical surgery.

From 1920 to 1924 there were eighty cases with 30 per cent of five-year "cures." During this period, radium was implanted under the skin, combined with radical surgery.

From 1924 to 1933 there were 154 cases with 55 per cent of five-year "cures." During this period, deep therapy X-ray has been added to radical surgery and radium implantation.

Had those cases having axillary glands been excluded, the percentage of five-year "cures" would be considerably higher. In records compiled from thirty-three hospitals in the United States, the percentage of five-year "cures" varies from 39 per cent to 49 per cent. It is interesting to observe that those hospitals combining irradiation with radical surgery give the higher percentages of five-year "cures."

There is one distinct danger with irradiation, and that is the surgeon might relax in the thoroughness of the operative procedures, hoping that irradiation will take care of his neglect.

Finally, I do not believe that irradiation has shown a replacement value as compared to surgery, but it is of value as an adjunct to the most radical and careful surgery of which the operator is capable.

*Jefferson Hospital.*

# Analyses, Selections, Etc.

**The Physician and N. R. A.**

On account of its great interest to all Americans at this time, we give herewith in full an editorial which appeared in the August 12th issue of the *Journal of the American Medical Association:*

Everywhere today men talk about the National Industrial Recovery Act. Questions have poured into the headquarters of the American Medical Association relative to the relationship of the medical profession to the N. R. A. and its stipulations. Probably the most significant of these questions concerns hours of work for physicians and hours of work and salaries to be paid to their assistants and attendants. At present it is safe to say that physicians are exempt, as are other professional men, from hours of work and payment stipulations under the N. R. A., and that their professional employees, such as laboratory technicians, radiologists, anesthetists and similar professional groups, are not immediately concerned. However, if a physician employs more than two persons as attendants in his office, of the class of clerical employees, accountants, laborers and similar types of help, they do come under the National Recovery Act with a minimum wage and certain maximum hours of work.

The medical profession, as far as concerns its private practice, need have no immediate concern over the stipulations of this act. The legislation is not intended to interfere with the personal relationship between physician and patient, necessary to the best type of medical care. Physicians have never had definite hours of work; they have always been subject to call at any moment for the benefit of their patients. The rights of the sick man are above hours of work or regulations of this character. It is hoped that every physician will enter wholly into the spirit of the National Recovery Act as an ideal, representing the government's point of view as to the principles and motives behind which the entire nation must unite if it is to pull itself out of the slough into which it has fallen.

In his relationship to the hospital, the physician will find himself in a somewhat more complicated situation. Because of the large number of employees involved, hospitals are definitely concerned under this act. A pre-

liminary interview of officers of the American Hospital Association with the Division of Re-Employment of the N. R. A. developed several interesting points of view. Apparently voluntary hospitals come under the provisions of the agreement with the possibility that they might be exempted when operated largely as charities incurring deficits in their operation, and also as institutions for the care of emergencies. It was the opinion of officials in Washington that administrative, professional nursing and student staffs, dietitians, technicians and other professional employees do not come under the provisions of the agreement, but that all maids, orderlies, waitresses, laundry workers and others in the lower level of wage earners do come within this classification. As hospitals give twenty-four hour service every day during the entire week, it was pointed out to General Hammond that it would work a hardship on the hospitals to attempt to apply a forty hour week for this type of personnel. Nevertheless, he expressed the opinion that seven days a week and eight hours a day constituted too many hours of employment and that even though the majority of such employees seldom put in a total of fifty-six hours, special consideration would have to be given to the question. This matter is being carried further by the American Hospital Association.

This act concerns the American Medical Association also as an employer in its headquarters office of some five hundred people. The headquarters office, by order of the Board of Trustees, entered promptly into the spirit of the act so far as concerns payment of employees in the lower wage levels and hours of work.

Again *The Journal* would urge physicians in all their relationships to enter fully into the spirit of the legislation, recognizing its experimental character but realizing that the times demand experimentation by the trial and error method if a solution is to be found for what has seemed in the past a most difficult problem.

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka Street, Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Avenue, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 South Market Street, Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Avenue, Norfolk.
Treasurer—Mrs. Reuben F. Simms, 2034 Park Avenue, Richmond.

## National President's Address at Milwaukee Meeting.

The following excerpts are taken from the address of Mrs. James Blake, Hopkins, Minn., President of the Auxiliary to the American Medical Association:

"It is good for us to come together for these annual meetings and discuss our problems. Everyone of them is of interest and importance to the members of our Auxiliary."

"In our democratic plan of Medical and Auxiliary Organization, the County Medical Society is the basic unit. It is the only door through which admission may be secured to the State, and American Medical Association Auxiliary."

"When the County Society Auxiliary fails, the State and National groups fail. The State Auxiliary is strong, active and achieving, only when its component County Auxiliary units seriously assume and discharge their responsibilities."

"I am a firm believer in State's rights. I am going to stress the Educational program, the Public Relations program, the advance of *Hygeia* for each individual state, and a system of Press and Publicity work among members of neighboring State Auxiliaries."

"I believe every State and County president should make a systematic search for wasted effort in her county organization, should try to fill gaps—eliminate all overlapping in program of work."

"Our imperative need today is an undistorted sense of values, constructive thought, logical reasoning and sound judgment, combined with common sense and 'Team Work.' We as 'Doctors' Wives' know that to no one is life level all the way—there are depths to go through and heights to climb, and we need courage and inspiration. In offering you your National Chairwomen, I assure you they are ready with inspiration if you will supply the courage to forge ahead."

"If as Shakespeare has remarked, 'All the world's a stage and all the men and women merely players' thereon in a drama of mixed tragedy and comedy, let us resolve to 'Act well our part, for there all honor lies.' And as the

curtain rolls down on our very pleasant, happy and profitable Milwaukee meeting, let us each remember our own State, our own County—every State and every County, in this great country of ours, is our stage. You, all Auxiliary members, and I, are the players. The drama is waiting for us to take our parts. The curtain is slowly rolling and unfolding a new year. As your stage manager, you will always find me ready to prompt your work, shift the scenery, start the orchestra or any other thing I can possibly do to help make this year one continuous success for all of us."

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Following are some suggestions offered by Mrs. Blake for Auxiliary work during 1933-34:

"I plan to make no radical changes in any Department of our work.

"I wish you at all times to remember that—

"The County or its equivalent, a District, Parish or a Council is the Unit for our work.

"Service to the men in our individual County Units, our keynote.

"The Advisory Board from the County Medical Society is our helpmate in every way.

"Sane planning of programs and expenditure of money the *duty* of every County President and her Executive Board, with the thought in the background of the County picture, that each County find and stress one thing if possible. Always remembering, that we aim *never* to tear *down*, but to back every worth while and authentic Health Project or Agency in a County, always remembering every group must *lead* or be *led*. So be the *leaders*, always under advice of your Advisory Council in every Community Project.

"Read your husband's State Medical Journal to keep in touch with the Problems of the Medical Profession. The picture is a wonderful panorama of changing scenery, and only by a monthly perusal of some authentic Medical Magazine, can you and I hope to keep our minds in condition to do a concrete, helpful piece of Auxiliary work."

"For the mutual benefit of every one on our membership list, let the Press and Publicity Department have your choice bits of work, your plans and your accomplishments."

"Everybody should make *Hygeia* a regular monthly diet. You just cannot exist in an Auxiliary way without it. And your influence in urging its use in any and every conceivable way by the lay public, will repay you and yours a hundred ways."

**State Annual Meeting.**

The annual meeting of the Auxiliary to the Medical Society of Virginia is to be held in Lynchburg, Ocotober 24th, 25th and 26th. An interesting program and attractive entertainments are being arranged for the ladies who attend this meeting. Mrs. George J. Tompkins, of Lynchburg, is chairman of the Ladies Committee. Preliminary program of this meeting will appear in the October issue of the MONTHLY.

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# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

E. R. Squibb & Sons

Ipral Tablets, ¾ grain

The following product has been included in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Non-official Remedies, 1933, p. 437):

Merck & Co., Inc.

Carbon Tetrachloride—Merck.

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# Book Announcements

**Pediatrics.** By HENRY DWIGHT CHAPIN, M. A., M. D., Professor-Emeritus of Pediatrics, New York Post-Graduate Medical School, Columbia University; Founder and Medical Director of the Speedwell Soceity, etc. And LAWRENCE T. ROYSTER, M. D., Professor of Pediatrics and Head of the Department of Pediatrics, University of Virginia. Seventh Edition. Revised and rewritten by Lawrence T. Royster, M. D. Baltimore. William Wood and Company. 1933. Octavo of 775-xvi pages. Cloth. Price, $7.00.

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### "Lend a Hand"

Every once in a while we feel we should remind our readers that they owe a debt to our advertisers which may be paid by patronizing those who patronize us. Our State journal belongs to each member of the Medical Society of Virginia and each of us should feel it an obligation and a pleasure to keep it to the highest mark possible. Reproducing a paragraph which appeared in the *Kentucky Medical Journal recently:*

"We, are, therefore, urging all member physicians to read the advertising pages of the Journal and to give their patronage, wherever and whenever practicable, to the dealers and manufacturers who have so generously supported our publication. It is only through such patronage of our advertisers by members of the profession that we can hope to continue the Journal in its present size and be so able to take care of all the worthwhile material submitted for publication."

Virginia Medical Monthly

Founded by Landon B. Edwards, M. D., April, 1874
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Subscription Price: $2.00 per annum in advance. Single Copies 25c.

Volume 60 SEPTEMBER, 1933 No. 6

# Editorial

**Anterior Pituitary Function.**

Medical publications have been filled with accounts of investigations into the action and disease of the pituitary gland. Practitioners no doubt have experienced a sense of some confusion as the story of the new found functions has been unfolded. Numerous appraisements of them have been attempted in recent years. Even therapeutic and clinical applications of them have been made in medical, obstetrical, and surgical practice. Rather widespread has become the employment of some therapeutic principles of the gland. Besides, recognition of disease of the pituitary has become more frequent by reason of the fact that its disease manifestations have received wide notice in medical literature. In view of the situation above noted, it is appropriate that a consideration of the sum of our present knowledge of the anterior pituitary function, as recently discussed by Herbert M. Evans.* should be given the subject here. This article will serve as a reference in such comments.

It seems in order to refer briefly to the pituitary body as a whole. The structure is situated at the base of the brain. It lies in the sella turcica. In man it weighs not much over a half a gram. It is connected with the brain by a funnel-shaped stalk called the infundibulum. The gland is split by a cleft and is thus divided in two portions, namely, the anterior and the posterior. The anterior or pars glandularis consists of masses of epithelial cells. This is rich in blood vessels which arise from the circle of willis and enter through the infundibulum. The posterior part or pars nervosa is made up of neuroglia, cells and fibers and lying between these, there is some hyaline or granular material. It is believed that in this material the active principle is found. Physiologists of the present day write of the functions of this remarkable little body. Experiments and studies show that the gland is not essential to the continuance of life. This fact is astounding in a way because for a long time tradition seemed to give to this gland powers that experiments show it does not possess directly. Evans says that "seven pieces of research have now adequately furnished the criteria essential for establishing the fact that no portion of the hypophysis is essential for the continuance of life itself." Complete removal of the gland is possible without death, but such removal is signalized immediately by mal-effects in the general body and these bad effects grow graver and more marked with a continuance of life. Evans notes that such abnormal states vary in different animals and the length of life may be affected by monstrous changes.

*Reference: J. A. M. A., August 5, 1933, page 425.

### The Growth Hormone

Growth changes are noted immediately upon the removal of the anterior lobe. Removal of this portion in the young animal continues the youth structures in the advancing age, such as possession of only milk dentition, fine hair,

open epiphyseal cartilages; a sort of perpetual youth; a youth that is a misfit in the adult, a dwarf, dwarfism resulting. What changes are produced by the parathyroid function in calcium metabolism is not as yet clearly determined. In such hypophysectomized animals, showing growth defects, as above described, immediate cessation of the mal-effects are noted upon adequate administration of the growth hormone. In dwarf rats and puppies, normal growth has been obtained by administration of the growth hormone. Even larger growth than normal has been gotten by the use of this growth hormone. Gigantism has been secured not only in the rat but in the dog. Evans states that in five months monstrous growth in purebred dachshunds has been produced; widening changes in the skull, overgrowth about the legs, head and neck; changes acromegalic in type have been produced.

### The "Sex" Hormone

Evans' discussion of this subject brings before the reader recently found facts in this important field. Impressive changes occur in the genital system from the removal of the pituitary. In hypophysectomized young animals and in adults, marked changes are found; in youth there is failure of development; in the adult there is regression of the system in both sexes. Testes shrink, atrophic changes of testicle tubules show no sperm structure, and the prostate, seminal vesicles, and Cowper's glands are dwarfed. In the female animal, similar changes occur in the ovaries and other generative structures. In these cases both male and female manifest little or no sex interest or desire. Evans points out, however, that these functions and structural changes respond to the therapeutic employment of hypophyseal tissue or sex hormone. In connection with this discussion, the author describes the circumstances that lead up to the detection of the sex hormone. The work of Zondek and Aschheim is brought out: how that in the Spring of 1926 they happened to introduce bits of anterior hypophyseal tissue under the skin in the case of some rodents which had showed an immature genital system, with the striking effect of complete establishment of sexual maturity. This change showed itself in from three to five days. From this starting point, much data has been collected until now it is possible to extract the gonad-stimulating hormone from hypophyseal tissue. Evans also describes how the sex hormone may be gotten from the placenta, blood, and urine of the pregnant animal. This is extremely interesting and constitutes a new chapter in physiology and offers much in speculative thought in this field. It should be noted, also, that there is evidence of a direct relation of mammary secretion to hypophyseal influence. To this subject, Corner, under the title "The Hormone Control of Lactation," published in 1930, drew attention. Evans' paragraph on this topic affords interested readers a starting point for study of publications on this subject.

### Respiratory Metabolism and the Thyrotropic Hormone

Under this title, Evans discourses upon interesting relations of metabolic rates and the disorders of the pituitary gland. Note is made of important observations disclosing strikingly low basal metabolic rates in cases of cachexia hypophysiopriva wherein there was found definite pituitary destruction or impairment. In the Fröhlich adiposity and other diseases of the pituitary, a low metabolic rate has been noted. The work of Foster and Smith, by hypophysectomy and replacement therapy in relation to basal metabolism and specific dynamic action in the rate showed lowering of the basal metabolic rate. When the posterior lobe alone and the anterior lobe alone were removed, no such decrease was observed, but on the removal of the whole gland, the metabolic rate was lowered. Other interesting effects are brought out. It is believed that there exists a thyrotropic hormone originating in synergistic actions of the anterior and posterior lobe of the pituitary.

### Carbohydrate Metabolism and a Diabetogenic Hormone

It has been long known that a relation exists between the hypophysis and carbohydrate metabolism, but the relation of carbohydrate metabolism to the anterior lobe of the pituitary has been established through the work of Houssay and co-workers and others. Houssay's group has shown that diabetes brought about by the removal of the pancreas is ameliorated in a striking manner by hypophysectomy of the animal. Evans observes that the anterior lobe implants bring on hyperglycemia in such animals. Detection or discovery of the hormone, possessing this control of the pancreas-pituitary relation in carbohydrate metab-

olism, has not been definitely made. Evans states that "the gonado-tropic hormone is clearly not involved" and further that diabetogenic hormone has not been separated from the growth and thyroid or epinephrine-effecting hormones.

### An Adrenalotrophic Hormone

One of the most interesting changes, notes Evans, is the effect, gotten by the removal of the pituitary gland, upon the adrenals. In such dwarf-animals the body weight is below normal and the suprarenals are atrophic and diminutive. As the suprarenal cortex is essential to life, it was noted that the strange sickness and death of such hypophysectomized animals is stopped immediately by the administration of aqueous alkaline extracts of the anterior lobe. Sudden resuscitation is further characterized by general body growth and regrowth of adrenal cortex. Hence, it appears that the adrenal cortex requires some constituent of the anterior lobe of the pituitary gland. In this new found interdependence it is hoped there is to emerge the discovery of an adrenalotrophic hormone as distinguished from some properties of the growth hormone, the thyrotropic hormone and the lactogenic hormone. It seems to be affiliated with some one of the elements of the growth hormone but not with all. It is hoped that Addison's disease may be attacked by the replacement of this special pituitary hormone from anterior lobe.

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Practitioners who peruse this thought stimulating account of the work in this field may be filled with wonderment. One can no longer fail to recognize the possibilities of this vast field over which this minute gland apparently presides—in the growth of the body, in the emotions or effects of sex life, in the lactation of the mother, in the action of the thyroid upon the heat and metabolism of the body, in the influence upon the metabolism of the "staff of life," carbohydrates, in the effect of the functions of the adrenals so necessary to life of the animal. One has the astounding fact to face that in the pituitary gland—in the anterior lobe—medical problems of vast proportion reside.

### Lynchburg Meeting of the Medical Society of Virginia.

The next annual meeting of the Medical Society of Virginia takes place in Lynchburg, October 24-26.

This meeting promises to offer much of interest to those who attend. The usual program of scientific papers will be presented. The program committee is giving attention to this matter and it is hoped that interesting material may be presented for consideration. It is urged that members make every effort to attend this meeting. The location makes for general accessibility to members. The hospitable city of Lynchburg will do everything possible to make the visiting profession comfortable. This meeting will doubtless have before it important practical matters that must receive the well considered judgment of the profession. For this reason, also, attendance is urged upon all.

### The Physician and the National Recovery Act.

Our readers are urged to read an editorial published August 12, 1933, in the *Journal of the American Medical Association*. This may be found, reproduced in full, in this issue of the Monthly on page 384.

Cooperation in this great effort is necessary if it is to succeed. Understanding of the plan is needed. Each industry and profession must comprehend its obligation in order to do its part. This carefully prepared statement by the Editor of the *Journal of the American Medical Association* contains the relationship and the obligations that the members of the medical association have in this national movement. A perusal of it will be helpful in arousing a lively and enthusiastic interest in this unprecedented mass movement for national economic recovery.

# Department of Clinical Education

## OF THE MEDICAL SOCIETY OF VIRGINIA

### A Children's Clinic.

In accordance with its policy of encouraging pediatric clinics for the practitioners of the state, the Department of Clinical Education secured two speakers from the University of Virginia for the meeting of the Medical Society of Northern Virginia on August 15th.

Among the guest speakers on the program

was Dr. C. E. Conrad, of Harrisonburg, who talked on "The Physician's Relation to the Health Program for Pre-School Children." Dr. L. T. Royster's subject was "Diarrhoea," followed by an exhibit of clinical cases, and Dr. R. V. Funsten spoke on "Congenital Deformities and the Orthopedic Treatment of Infantile Paralysis," also followed by an exhibit of cases.

This is the first of an anticipated series of local society meetings featuring pediatrics, a subject in which many physicians expressed interest at the completion of classes in prenatal and postnatal care conducted by the Joint Committee. The fostering of pediatric programs is in accordance with the motion adopted at a meeting of the Department of Clinical Education that "The Department goes on record as favoring the provision of a definite pediatric program to be conducted under the auspices of the local medical societies and recommends that one all-day pediatric clinic be held each year by such societies, if possible."

The Department of Clinical Education and the Pediatric Society of Virginia are glad to cooperate in any possible way to help secure speakers on pediatric subjects for local society meetings.

Geo. W. Eutsler,
*Executive Secretary.*

**Progress of Sixth Circuit of Classes in Prenatal and Postnatal Care.**

With the completion of four meetings of the course in prenatal and postnatal care in Lebanon, Tazewell, Bristol, Marion and Abingdon, the success of the circuit seems assured. The total enrollment for the five classes originally scheduled is 53, and the average attendance each week 58.5. Despite the mid-summer heat and storms, the attendance at classes in this sixth circuit has been above the average, with a per cent of 82.2 for the enrolled members. Dr. Lapham, the Field Clinician, has had many calls for his out-of-class consultation services, and the interest and cooperation of the physicians taking the course has been most encouraging.

One meeting of the Tazewell group was held in Bluefield, West Virginia, at the invitation of Dr. H. G. Steele, so that the members of the class might have the benefit of demonstration upon the patients in the prenatal clinic there.

Below is a table showing figures for the first four meetings of the classes now being conducted in Southwest Virginia.

| | *Enrolled* | | *Visitors* | | *Attendance* | |
|---|---|---|---|---|---|---|
| | *No.* | *Present* | *No.* | *Present* | *Average* | *Per cent* |
| Tazewell | 9 | 30 | 7 | 9 | 9.7 | 83.3 |
| Lebanon | 8* | 20 | 3 | 6 | 6.5 | 71.4 |
| Bristol | 15* | 45 | 16 | 32 | 19.2 | 80.3 |
| Abingdon | 11* | 35 | 6 | 11 | 11.5 | 87.5 |
| Marion | 10 | 35 | 5 | 11 | 11 5 | 87.5 |
| | 53 | 165 | 37 | 69 | 58.5 | 82.0 |

*Excluding from percentages one enrolled member who has never attended.

Richlands Class

In addition to the enrollment of fifty-three in the five classes listed above, a sixth class was added to the circuit through the influence of Dr. J. P. Williams for the convenience of physicians in Richlands and vicinity. Dr. Lapham was glad to take on the extra class, which meets on Tuesdays at 7:30 P. M., in the hospital at Richlands. The physicians attending the four meetings which have been held are: Drs. Rufus Brittain, I. W. Cunningham, A. D. Parson, W. A. Seawell, J. W. Shawver, J. P. Williams and W. R. Williams. Despite the handicap of delay in organization, the average attendance has been 6.25 for four meetings and the per cent of attendance 89.2—a percentage higher than for any other class in the circuit and well above the average of all the circuits which have been conducted. This response and interest is very gratifying to the Joint Committee and to those interested in its undertaking.

**Plans for Circuit in Danville and Vicinity.**

Upon the completion of the sixth circuit in the middle of September, it is expected that Dr. Lapham will conduct a circuit of classes in Danville and vicinity, with centers tentatively planned for Danville, Chatham, Martinsville and convenient points in Mecklenburg and Halifax counties. Dr. P. W. Miles and Dr. I. C. Harrison have written of the interest of the Danville physicians in the course and predicted that twenty or more physicians would enroll for the course there. Dr. J. M. Shackelford, of Martinsville, has confirmed the interest of his colleagues there and predicted that a class of at least ten will enroll. An agent of the Joint Committee expects to attend meetings of local societies in the first week of September to explain the proposed classes and secure the approval of the socie-

ties for going forward with the work of organization in the territory. At such a favorable season of the year and with the successful experience of a year and a half behind it, it is anticipated that the Danville area will furnish a circuit of classes as favorable to post-graduate study as any that have been conducted.

GEO. W. EUTSLER,
*Secretary of Joint Committee.*

# Proceedings of Societies

**Virginia State Board of Medical Examiners.**

The number of new doctors licensed by the State Board of Medical Examiners in June was said to be the largest within the past twenty years. Of those listed below, sixteen were received through reciprocity:

Dr. Charles J. Albright, Norfolk, Va.
Dr. C. V. Amole, University, Va.
Dr. E. H. Anderson, Richmond, Va.
Dr. Clarence E. Arnette, Richmond, Va.
Dr. W. H. Aufrane, Columbia, Mo.
Dr. L. P. Bailey, Scottsburg, Va.
Dr. James P. Baker, Jr., Boston, Mass.
Dr. E. E. Barksdale, University, Va.
Dr. S. J. Beeken, Richmond, Va.
Dr. John G. Bell, Richmond, Va.
Dr. Wm M. Bickers, Boston, Mass.
Dr. Wm. R. Bishop, Galax, Va.
Dr. Francis Isabelino Bloise, Lorton, Va.
Dr. N. Lewis Bosworth, Jr., University, Va.
Dr. Francis K. Bradford, Richmond, Va.
Dr. Felix J. Brown, Washington, D. C.
Dr. R. H. Bruner, Washington, D. C.
Dr. Robert Buckley, Richmond, Va.
Dr. H. R. Butt, Bethlehem, Pa.
Dr. E. P. Buxton, Jr., Richmond, Va.
Dr. Paul Douglas Camp, Jr., Richmond, Va.
Dr. Joseph W. Carney, Huntington, W. Va.
Dr. W. B. Carpenter, Richmond, Va.
Dr. Pietro Caruso, Richmond, Va.
Dr. Wm Hardee Chapman, Montvale, Va.
Dr. Edgar Childrey, Jr., Dumbarton, Va.
Dr. Homer F. Clarke, Massies Mill, Va.
Dr. Alfred J. Coan, Baltimore, Md.
Dr. Gilbert C. Cockburn, Washington, D. C.
Dr. Andrew Thomas Cole, Chilhowie, Va.
Dr. E. O. Coleman, Richmond, Va.
Dr. Wm. D. Comess, Altoona, Pa.
Dr. Charles H. Conley, Frederick, Md.
Dr. C. W. Copenhaver, Bristol, Tenn.
Dr. F. J. Crigler, Richmond, Va.
Dr. Wm. Gayle Crutchfield, Richmond, Va.
Dr. Paul Q. Daniel, Deltaville, Va.
Dr. Howard L. Dean, Petersburg, Va.
Dr. John E. Dees, State Sanatorium, Md
Dr. Edward A. Delarue, Jr., Sanatorium, Va.
Dr. Robert H. Detwiler, Clarendon, Va.
Dr. William Sterling Dosher, Richmond, Va.
Dr. Samuel F. Driver, Troutville, Va.
Dr. James S. Dryden, Norfolk, Va.
Dr. J. N. Dudley, Richmond, Va.
Dr. Willis F. Evans, Richmond, Va.
Dr. Gerard V. Farinola, Brooklyn, N. Y.
Dr. A. T. Finch, Jr., Chase City, Va.
Dr. Daniel Sebastian Fisher, Parksley, Va.
Dr. G. S. Fitz-Hugh, University, Va.
Dr. Hamilton D. Fitzpatrick, Richmond, Va.
Dr. H. F Flippin, University, Va.
Dr. M. D. Foster, Richmond, Va.
Dr. Alton Brooks Freeman, Richmond, Va.
Dr. Harry M. Frieden, Norfolk, Va
Dr. M. T. Garrett, Washington, D. C.
Dr. C. E. Glenn, Dumbarton, Va.
Dr. M. M. Gordon, Washington, D. C.
Dr. J. T Green, Jr., Madison, Wis.
Dr. B. C. Grigsby, Richmond, Va.
Dr. Wm. Grossman, University, Va.
Dr. H H. Hammer, Winston-Salem, N. C.
Dr. Herbert Rudolph Hartwell, Roanoke, Va.
Dr. Fred Hauser, Richmond, Va.
Dr. Josiah E. Haynesworth, Jr., Buckingham, Va.
Dr. W. E. Herrell, Seattle, Wash.
Dr. Upshur Higginbotham, Bluefield, W. Va.
Dr. R. N. Hillsman, University, Va.
Dr. J. M. Hitch, Jr., University, Va.
Dr. Paul Hogg, Wicomico, Va.
Dr J. B. Hopkins, Richmond, Va.
Dr. John B. Hozier, Seattle, Wash.
Dr. J. M. Hurt, Blackstone, Va.
Dr. F. M. Jacobs, Roanoke, Va.
Dr. J. M. Jackson, Harrisonburg, Va.
Dr. C. C. Johnson, Baltimore, Md.
Dr. J. B. Johnson, Jr., Richmond, Va.
Dr. Mary E. Johnston, Richmond, Va.
Dr. J. Bernard Jones, Norfolk, Va.
Dr. L. P. Jones, Richmond, Va.
Dr. R. A G. Jones, Richmond, Va.
Dr. R. H. Jones, Chattanooga, Tenn.
Dr. Robert H. Jordan, Huntington, W. Va.
Dr. Samuel H. Justa, Richmond, Va.
Dr. W. L. Kelly, Cincinnati, Ohio.
Dr. Edward L. Kinney, Charlottesville, Va.
Dr. J. L. Kinzie, Richmond, Va.
Dr. J. B. Kiser, Richmond, Va.
Dr. Henry M. Ladrey, Washington, D. C.
Dr. A. F. Lapsley, Louisville, Ky.
Dr. Norman L. Lee, Washington, D. C.
Dr. Gershan J. Levin, Norfolk, Va.
Dr. R. G. Magruder, New York, N. Y
Dr. C. H. Mauzy, Jr., Harrisonburg, Va.
Dr. Ernest F McClellan, Huntington, W. Va.
Dr. Moses H. McClintic, New York, N. Y.
Dr. Eleanor H. McCoy, Cambridge, Mass.
Dr. H. C McCoy, University, Va.
Dr. E. P. McKinney, Cincinnati, Ohio.
Dr. Samuel Mirmelstein, Akron, Ohio.
Dr. O. F Mitchell, Headwaters, Va.
Dr. B. W. Mongle, Holston, Va.
Dr. A. R. Payne, University, Va.
Dr P. C. Pearson, Richmond, Va.
Dr. E. W. Perkins, III, Petersburg, Va.
Dr. F. R. Person, University, Va.
Dr. B. K Peter, University, Va.
Dr. C. Burchell Phillips, Washington, D. C.
Dr. J. F. Phillips, Newport News, Va.
Dr. J. W. Phillips, Jr., Richmond, Va.
Dr. J. B. Porterfield, Charlottesville, Va.

Dr. C. W. Purcell, Louisa, Va.
Dr. W. A. Read, Newport News, Va.
Dr. Patter A. Richards, Richmond, Va.
Dr. C. B. Robertson, Petersburg, Va.
Dr. J. A. Ronan, Alexandria, Va.
Dr. George F. Salle, Hallsboro, Va.
Dr. Wm. Schnauffer, Jr., Richmond, Va.
Dr. James Scott, University, Va.
Dr. Mildred E. Scott, Fredericksburg, Va.
Dr. E. W. Senter, Bristol, Tenn.
Dr. Andrew Shapiro, Petersburg, Va.
Dr. Nathan Sharove, Richmond, Va.
Dr. Merriwell Tieche Shelton, Chatham, Va.
Dr. H. B. Showalter, Kenbridge, Va.
Dr. I T. Shure, Brooklyn, N. Y.
Dr. Victor H. Simiele, Norfolk, Va.
Dr. John A. Sims, Charlottesville, Va.
Dr. R. B. Smiley, Salem, Va
Dr. Joel H. Smith, Athens, W. Va.
Dr. J. S. Staley, Marion, W. Va
Dr. Jacob Edmund Stanfill, Pennington Gap, Va.
Dr. Alfred Steiner, Richmond, Va.
Dr. Edward Stratton, Jr., Jersey City, N. J.
Dr. H. A. Stratton, Washington, D. C.
Dr. J. T. B Strode, Amherst, Va.
Dr. Caldwell Jackson Stuart, Dahlgren, Va.
Dr. J. A. M. Thompson, University, Va.
Dr. G. N. Thrift, Madison, Va.
Dr. Thomas Haze Tomlinson, Jr., Ambury, Va.
Dr. J. W. Trenis, Callett, Va.
Dr. R. I. Trent, University, Va.
Dr. Albert Trimpert, Alexandria, Va.
Dr. A. K. Turner, Boston, Mass.
Dr. V A. Turner, University, Va.
Dr. E. T. Upson, Baltimore, Md.
Dr. E. D. Vaughan, Ashland, Va.
Dr. J. E. Vaughan, Charleston, W. Va.
Dr. George E. Waters, Baltimore, Md.
Dr. J. O. Watkins, Jr., Richmond, Va.
Dr. Herman Weinberg, New Orleans, La.
Dr. James E. White, Norfolk, Va.
Dr. Hugh L. C. Wilkerson, Petersburg, Va.
Dr. P. L Wolgin, Elizabeth, N. J.
Dr. W. H. Wood, Jr., Charlottesville, Va.

**The Augusta County Medical Association, Inc.,**

Held its annual meeting August 2nd at Staunton, Va., with the president, Dr. Glenn C. Campbell, presiding. There was a large attendance and several new members were elected. Case reports were presented by Drs. A. F. Robertson, M. J. Payne, Kenneth Bradford and A. L. Tynes.

The following officers were elected: President, Dr. H. T. Hawkins, Waynesboro; vice-presidents, Drs. T. R. Rolston, New Hope; C. W. Rodgers, and J. B. Catlett, both of Staunton; secretary, Dr. W. F. Hartman, Swoope (re-elected); and treasurer, Dr. T. M. Parkins, Staunton (re-elected). Delegates to the State Society meeting were also appointed at this time.

**The Loudoun County Medical Society,**

At its meeting held at the home of Dr. W. O. Bailey, on July 19th, re-elected Dr. H. P. Gibson and Dr. W. O. Bailey, both of Leesburg, as president and secretary-treasurer, respectively.

# News Notes

**All Members Should Accept This Invitation.**

In addition to the invitation extended by the Lynchburg Academy of Medicine, Inc., to hold our sixty-fourth annual meeting in their city this Fall, the following cordial welcome has been extended our Society by the Mayor, in behalf of the city:

> The City of Lynchburg extends a most cordial invitation to the members of the Medical Society of Virginia to attend the State meeting of the Society, to be held in Lynchburg, on October 24, 25 and 26.
>
> Lynchburg is most centrally located, and has excellent hotel facilities. We hope that a large number of members can be present at this meeting.
>
> Yours very truly,
>
> JOHN VICTOR,
> *Mayor.*

HIGH LIGHTS ABOUT THE MEETING

Golfing and other privileges of the Oakwood and Boonsboro Country Clubs will be extended to the members and guests of the State Society attending the meeting in October. A golf tournament will be held on the 24th, at the Boonsboro Country Club and all members desiring to enter are requested to send in their entries to Dr. F. O. Plunkett, Allied Arts Bldg., Lynchburg, Va.

Dr. Don Preston Peters is in charge of the Scientific Exhibits and all planning such exhibits should communicate with him or write Dr. C. B. Morton, State Society Chairman, University, Va. The convention headquarters in the Virginian Hotel provide abundant and convenient space for all exhibits, with the commercial exhibits in the main lobby, and the scientific exhibits in a commodious anteroom to the main meeting hall.

Dr. James R. Gorman heads the committee on Hotels and meeting places, and requests that members and guests wishing reservations notify him of their expected time of arrival, duration of stay, and accommodations desired. The Virginian Hotel offers single rooms without bath

for $1.75, single rooms with bath $2 50 to $3.50 and double rooms with bath $4.00 to $6.00. The Carroll Hotel, one block away, offers single rooms without bath $1.50 to $1.75, with bath $2.00 to $2.50, donble rooms without bath $2.50 to $3.00, with bath $3.00 to $3.50. In addition there are several smaller hotels within one or two blocks with accommodations from $1.00 up.

Mrs. Geo. J. Tompkins, and committee, are preparing plans for the entertainment of the visiting ladies. These plans will center largely aronnd functions to be held at the Country and Woman's Clubs.

**The Southwestern Virginia Medical Society**

Is to hold its semi-annnal meeting in Wytheville, September 15th, under the presidency of Dr. J. A. Noblin, of East Radford. The secretary, Dr. H. W. Bachman, Bristol, advises that the following titles had been received from members at time we go to press: Endometriomata, by Dr. A. P. Jones, Roanoke: Bronchoscopy, Its Valne to the General Practitioner, by Dr. E. G. Gill, Roanoke; Fever Therapy in Paresis, Dr. James King, Radford; Caesarean Sections, by Dr. A. M. Showalter, Christiansburg. Dr. J. B. McElroy, Memphis, Tenn., will be one of the guest speakers and will take as his subject some phase of Bright's disease.

**Married.**

Dr. Fred Taylor Renick, Crozet, Va., and Miss Frances Hughes, Harrisonburg, Va., July 10th. Dr. Renick graduated from the Medical College of Virginia in 1931, following which he interned at Gallinger Hospital, Washington, D. C.

Dr. Randolph Bryan Grinnan and Miss Adelaide Richardson Buist, Brooklyn, N. Y., August 5th. Dr. Grinnan was formerly of Norfolk, Va., and graduated from the University of Virginia, Department of Medicine, in 1932, since which time he has been interning at the Boston (Mass.) City Hospital.

Dr. Robert Buckley, of the 1933 class, Medical College of Virginia, and Miss Maxine Elizabeth Frix, both of Richmond, Va., August 8th.

Dr. Howe Reese Coleman, Jr., Lexington, Va., of the class of '29, University of Virginia, Department of Medicine, and Miss Virginia Hightower, Montgomery, Ala., August 22nd.

**The Southside Virginia Medical Association**

Will hold its next quarterly meeting in Emporia, Va., September 12th. An interesting program is being arranged for this occasion. Dr. D. C. Mayes, Church Road, is president, and Dr. R. L. Raiford, Franklin, secretary.

**Richmond Meeting of S. M. A.**

It has been such a number of years since the Southern Medical Association met in Richmond, that doctors in this section are looking forward with special interest to this occasion on November 14th to 17th, inclusive. An excellent program is being arranged and will include the usual exhibits and clinics. The post-meeting day in Washington also offers much of interest.

Inquiries as to details, according to their nature, should be addressed to Mr. C. P. Loranz, secretary-manager, Empire Building, Birmingham, Ala., or to Dr. Fred M. Hodges, 1000 West Franklin Street, Richmond, Va., general chairman of the local committee of arrangements.

**News Notes From Medical College of Virginia.**

Promotions in the major faculty for the session 1933-34 are as follows:

In the school of medicine, Dr. Wyndham B. Blanton from associate professor of the history of medicine to professor of the history of medicine.

Dr. W. R. Bond from associate professor of physiology to professor of physiology.

Dr. H. B. Haag from associate professor of pharmacology to professor of pharmacology.

Dr. R. H. Courtney from assistant professor of ophthalmology to associate professor of ophthalmology.

Dr. D. D. Talley from associate professor of roentgenology to professor of roentgenology, succeeding the late Dr. Alfred L. Gray.

In the school of dentistry, Dr. Harry Lyons from professor of periodontia and associate professor of oral pathology and therapeutics to professor of periodontia and oral pathology.

Dr. R. L. Simpson from professor of crown and bridge prosthesis to professor of clinical practice.

Dr. P. L. Chevalier from associate professor of crown and bridge prosthesis to professor of crown and bridge prosthesis.

Dr. S. F. Bradel from associate in crown and bridge prosthesis to assistant professor of crown and bridge prosthesis.

Dr. J. G. Jantz from associate in anatomy to assistant professor of anatomy.

In the school of nursing, Miss Lulu K. Wolf from associate in nursing to assistant professor of nursing.

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Dr. Charles W. Morhart, of Cleveland, Ohio, has been appointed instructor in prosthetic dentistry for the session 1933-34, succeeding Dr. V. R. Trapozzano, resigned.

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Recent alumni visitors to the college were: Dr. J. B. H. Bonner '32, Dr. Clarence Porter Jones '95 and Dr. J. D. Sharp '31

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Dr. J. L. McElroy, superintendent of the hospital division since 1929, has resigned to become director of the American Hospital, Paris, France. He has already left to take up his new duties. Dr. McElroy was an able and experienced hospital executive and made an important contribution to the upbuilding of the college hospitals.

Dr. Lewis E. Jarrett, senior assistant superintendent of the hospital division, has been promoted to the superintendency, succeeding Dr. J. L. McElroy, resigned. Dr. Jarrett is a native of Lexington, Va., a graduate both in the school of pharmacy and of medicine, Medical College of Virginia. He has been a member of the hospital administrative staff of the college hospitals for about ten years. As a medical student he won high honors and was president of the student body his senior year.

**News from Duke University School of Medicine and Duke Hospital.**

The following appointment, effective October 1, 1933, has been made: Dr. Frederic M. Hanes, of Winston-Salem, N. C., Professor of Medicine in the School of Medicine and head of the department of medicine in the Hospital. Dr. Hanes was graduated with the A. B. degree from the University of North Carolina in 1903; received the A. M. degree from Harvard University in 1904, and the degree of M. D. from The Johns Hopkins University School of Medicine in 1908. He was Associate Professor of Pathology at Columbia University for three years, and Associate Professor of Medicine at Washington University for a year. He has been connected with the Presbyterian Hospital in New York, the Rockefeller Institute, and Queen's Square Hospital, London.

In addition to the above, twelve new appointments have been made to the resident staff of the hospital.

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The following seniors have been elected to membership in the Honorary Fraternity of Alpha Omega Alpha: Robert L. McMillan, Paul G. Reque and Jarrett E. Williams.

**Dr. Booker Lee,**

Formerly of Roanoke, Va., is now located at Pulaski, Va., where he is engaged in the practice of his specialty, diseases of the eye, ear, nose and throat.

**Dr. William C. Schroeder**

Has opened offices in Medical Arts Building, Norfolk, Va., where his practice will be limited to tuberculosis. He graduated from the University of Virginia, Department of Medicine, in 1899.

After several years of general practice in Portsmouth, Va., Dr. Schroeder entered the U. S. Public Health Service where his work had to do largely with tuberculosis. He later served as superintendent of the New York City Municipal Sanatorium at Otisville, N. Y.

**Dr. John B. H. Bonner,**

Class of '32, Medical College of Virginia, who served his internship last year at the State Hospital, Hazleton, Pa., has located at Maidens, Va., for general practice. He will also serve as resident physician for the Industrial School for Boys at that place.

**A Medico-Military Course for Medical Reserve Officers.**

The medico-military course of inactive duty training for Medical Department Reserve officers, which has been held at the Mayo Clinic during the past four years, will again be held this year from October 1st to 14th, both dates, inclusive. This inactive duty training will follow the plan so well worked out under the auspices of Colonel George A. Skinner and the military features will be under his personal supervision.

The course offers valuable and interesting training for the Medical Department officers of all the components of our national defense. The staff and faculty of the Mayo Clinic have again placed their unexcelled facilities at the service of their government in the interest of preparedness, and have extended an invitation to all the services to participate.

This short course is equally applicable to

general practitioners and specialists. The morning hours are devoted to purely professional subjects selected by the student officers. The afternoon hours pertain solely to medico-military subjects and the evening hours are covered in a lyceum course of general interst.

Application for this course of inactive duty training should be made to the Corps Area Surgeon, Seventh Corps Area, Omaha, Neb. Applications should state the character of the work the candidate desires to follow in the morning hours. All student officers are expected to attend and participate in the afternoon and evening sessions. Each applicant should fully understand that the invitation to accept this course of study without charge is extended by the Mayo Clinic; that the project is without expense to the Government; and that one hundred hours' credit will be given those who take and complete the course. While it is desirable to attend the entire course, those whose time will not permit this may join or leave at any time and will receive credit for the hours spent in training. Uniforms are optional.

**Dr. E. G. Gill,**

Roanoke, Va., was elected to the Board of Directors of the Lions' International, at its recent convention in St. Louis.

**The American Public Health Association**

Will hold its sixty-second annual meeting in Indianapolis, October 9-13, 1933.

Details with regard to the scientific program may be obtained from the American Public Health Association, 450 Seventh Avenue, New York, N. Y.

**Capt. Claude L. Neale, M. C., U. S. A.,**

Who was recently transferred from Fort Monroe, Va., to Tripler General Hospital, Honolulu, T. H., is at present chief of the obstetric and pediatric sections at the Hospital. Dr. Neale is a member of the class of '28, Medical College of Virginia.

**Dr. Charles Neill Scott,**

Class of '32, Medical College of Virginia, who interned at Stuart Circle Hospital, Richmond, the past year, has located in this city for general practice and has offices at 2219 Park Avenue.

**Dr. Meyer Vitsky**

Has located at 1103 West Franklin Street, Richmond, Va., for general practice, emphasizing obstetrics. He is a graduate of the Medical College of Virginia in the class of '30, and last year was resident physician at the Retreat for the Sick Hospital, Richmond.

**Interstate Post-Graduate Medical Association of North America.**

The International Assembly of the Interstate Post-Graduate Medical Association of North America will be held in the Public Auditorium, Cleveland, Ohio, October 16-20, 1933. This year's president is Dr. William J. Mayo, of Rochester, Minn. Many distinguished teachers and clinicians will appear on the program. A major list of the names of the contributors to the program, with other information, appears on advertising page 2, of this issue of the Monthly. All members of the Medical Society of Virginia are invited to attend. The registration fee of $5.00 admits all members of the profession in good standing. Reduced railroad rates may be secured from all parts of the United States and Canada.

Detailed information and programs may be had from the Managing Director, Dr. William B. Peck, Freeport, Ill.

**Dr. L. I. Hoke,**

Recently of Quinwood, W. Va., has moved to Layland, W. Va. Dr. Hoke is an alumnus of the Medical College of Virginia, class of '29.

**Dr. James G. Lyerly,**

Recently of Richmond, Va., where he was assistant professor of neurological surgery in the Medical College of Virginia, has located in Jacksonville, Fla., with offices in St. James Building. He will continue the practice of his specialty in that city.

**Dr. W. Gayle Crutchfield,**

Of Lexington, Ky., has recently become associated with Dr. C. C. Coleman, in Richmond, Va., in the practice of neurological surgery. Dr. Crutchfield is a graduate of Johns Hopkins University. He took his hospital service in the Wilmer Institute and Women's Hospital in Baltimore, the Peter Bent Brigham Hospital in Boston, and further post-graduate work in the surgical clinics of Vienna. Dr. Crutchfield succeeds Dr. J. G. Lyerly who has recently moved to Jacksonville, Fla.

**Dr. George Tully Vaughan,**

Washington, D. C., recently resigned as professor of surgery at Georgetown University School of Medicine, after a service of over

thirty-five years, and was made professor emeritus.

Dr. James A. Cahill, Jr., professor of clinical surgery, will succeed Dr. Vaughan.

**The American Congress of Radiology,**

Which will include meetings of the American College of Radiology, the American Radium Society, the American Roentgen Ray Society, and the Radiological Society of North America, will meet in Chicago, September 25th to 30th. Dr. Henry K. Pancoast, of Philadelphia, is president of the Congress. Further information may be obtained from Dr. Benjamin H. Orndoff, 2561 North Clark Street, Chicago, Ill.

**Dr. Charles O. Moody,**

Of the class of '31, Medical College of Virginia, recently located in Hampton, Va., for the general practice of medicine. Dr. Moody spent the past year in Morgantown, W. Va., where he was connected with the Medical Faculty of the West Virginia University as an instructor.

**The Graduate Fortnight of New York Academy of Medicine**

Is to be held in New York, October 23 to November 3, 1933, the subject this year being "Disorders of Metabolism." There will be hospital clinics in fifteen of New York's leading hospitals, evening sessions with prominent speakers, and a scientific exhibit bearing upon the various aspects of the general subject.

Those interested may obtain detailed information and a program from the New York Academy of Medicine, 2 East 103rd Street, New York City.

**Dr. Frank W. Hewlett,**

Richmond, member of the class of '31, Medical College of Virginia, has just been appointed a first lieutenant in the Medical Corps Reserve.

**Dr. C. L. Fifer,**

Recently of University, Va., has located in Alexandria, Va., with offices at 904 Prince Street. He will limit his practice to surgery and gynecology. He is a graduate of the University of Virginia, in the class of '28, since which time he has interned and taken post-graduate work in his specialty at the University.

**Dr. W. Harman Evans,**

For some time of Lynchburg, Va., announces his change of address to Concord Depot, Va.

**Dr. Richard B. Nicholls,**

Who has been engaged in the practice of obstetrics and gynecology in Norfolk, Va., since October, 1932, has moved his offices to 808 Wainwright Building, that city, where he will continue the practice of his specialty.

**A Microscopic, Oral Cavity, and Bone Diagnostic Demonstration**

With lantern slides, is to be held at the Mayflower Hotel, Washington, D. C., September 17 to the 24, 1933, inclusive. The change from Baltimore, the usual place for holding these demonstrations, to Washington is because of the artificially cooled demonstration rooms, etc. A case to be shown must be put in lantern slides. Dr. Joseph Colt Bloodgood, of Baltimore, is sponsoring this demonstration. For further information, write Dr. Charles F. Geschickter, Johns Hopkins Hospital, Baltimore, Md.

# Obituary Record

**Dr. William Samuel Briggs,**

Prominent physician of Dinwiddie County, Va., died August 8th, as a result of injuries received in a fall. He was 76 years of age and a graduate of the Kentucky School of Medicine in 1890. Dr. Briggs had practiced in Dinwiddie County since his graduation. He had been a member of the Medical Society of Virginia for thirty years. Two sons and a daughter survive him.

**Dr. T. G. Brown,**

Gainesville, Va., died August 3rd, following a long illness. He was 76 years of age and a graduate of the University of Maryland. Dr. Brown had practiced medicine in Fauquier and Prince William Counties for fifty years. He was a member of the Medical Society of Virginia. His wife and two sons survive him.

**Dr. Ernest Helm Muse**

Died in Roanoke, Va., June 10, 1933, age 52. Dr. Muse graduated from the University College of Medicine, Richmond, class of 1907. Following his graduation, he took post-graduate work at the New York Polyclinic. He was active in fraternal organizations, being a member of the Shrine, D.O K.K. and Elks and had been a member of the Medical Society of Virginia for twenty-six years. Dr. Muse never married but is survived by his brother, William R. Muse, D.D.S., of Roanoke.

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RICHMOND, VA., OCTOBER, 1933

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"[1] *J. Soc. Chem. Ind.*, 1923, 42, 185, 205."

*J. C. Drummond and T. P. Hilditch: The Relative Values of Cod Liver Oils from Various Sources, His Majesty's Stationery Office, London, 1930.

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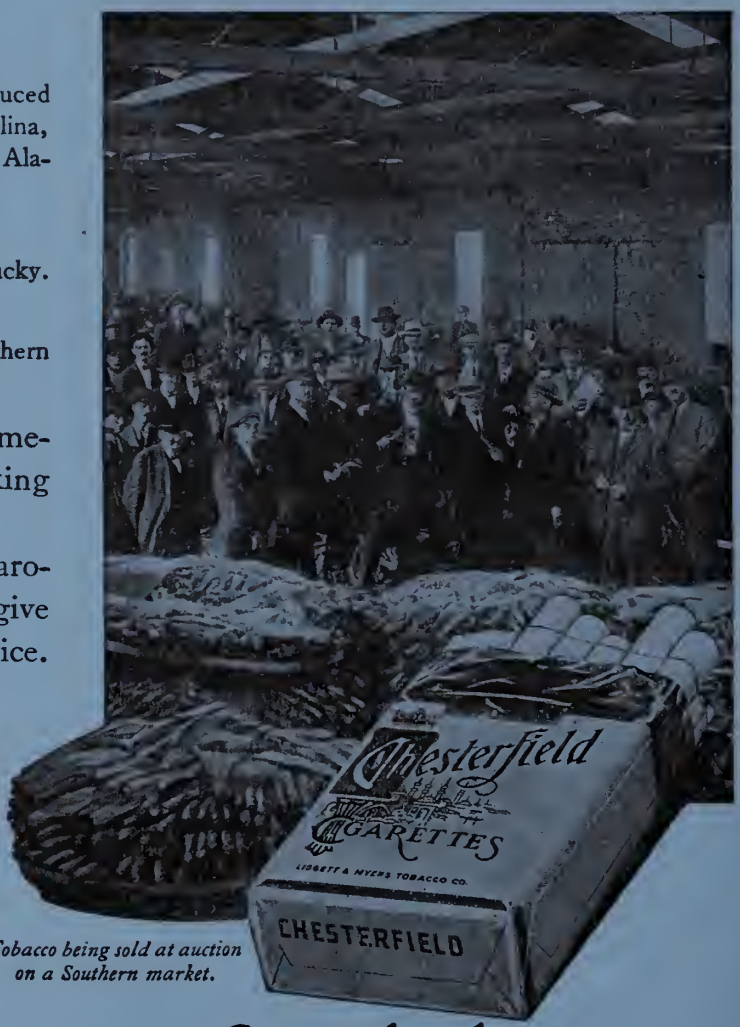


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## ECONOMIC TRENDS IN MEDICAL PRACTICE.

ANDREW D. HART, JR., M. D., University, Va.

I

Within the past decade the attention of the medical and lay public has been drawn to a mutually fundamental problem,—a problem of vital consequence to any society in that it involves the health and happiness of its members. The question is in brief the provision of adequate medical care to those vast numbers of our people who are unable to bear the expense incident to its effectuation.

From the viewpoint of the economist the cost of medical care, in theory analogous to the cost of any service, should be directly proportional to the quality of its excellence. Compared to the medical practice of a generation ago, modern scientific service has attained a remarkable degree of potential merit. The average span of human life has been, since the dawn of the present century, materially extended and largely so through the application of widespread scientific investigations to the prevention and relief of sickness. Such progress is of necessity a function of special knowledge, special study, special equipment, time and expense. The *northwest passage* to the intellectual world intimated by Sterne has yet to be discovered. Mass application of particular knowledge demands an employment of the means by which that knowledge may be acquired—*ex nihilo nihil fit.* The added cost of an improved quality in medical service must compel a commensurate reward. And as an equally basic economic principle such cost must ultimately be borne by the recipients of that service or some representative of their interests.

The resultant increase in financial burden cannot be carried individually by a people who living literally from hand to mouth have ever neglected to prepare for the advent of illness. Nor may the active physician, as in the past, do more than contribute liberally of his experience and time. The costs of hospitalization and necessary X-ray and laboratory procedures have no place in the budgets of the vast majority of the American people, who dwell (and perhaps wisely) in the serenity of the day, "taking no thought for the morrow, for the morrow shall take thought for the things of itself."

The present situation is the result of no sudden calamitous stroke nor has its insidious development passed unheralded. Valiant efforts to a solution have been made by communities, by the State, and through the foresight and generosity of individuals and groups. Yet it may be said with truth that except in the endowed clinics of large cities and in limited state and urban institutions, the quality of available medical attention remains dependent upon the variable abilities of persons to pay. The masses of our rural population and that great army of limited wage earners who abjure pauperization have but meager recourse to the highest quality of medical service.

It may be said, as an economic aphorism, that the situation, an obvious outgrowth of natural laws, is as it should be; that the good things of life must be the reward of those whose worth directs their attainment. The truth and practicability of such an inherently rational concept cannot be denied. Yet the lofty ideals of the medical profession have through the ages rested upon a pillar of altruism. The health of the whole people, the greatest good for the greatest number—medical socialism—has continued to dominate the perspective of the majority of its members. That the quality of medical care should be commensurate with station or with financial security has ever been decried by those whose highest precept is that the basis of relief of human suffering may not be subservient to cold economic standards. This practical humanitarianism of the medical fraternity is

in close accord with the innate idealism of our people. To the average mind death seems a spiritual event and its associations abide far above the commonplace temporal happenings of life:

"The quality of mercy is not strain'd.
It droppeth as the gentle rain from heaven . . ."

Pain is no luxury to be distributed among us according to our tastes and worth. The poor we have with us always but not the poor in heart. There are homely joys among obscure destinies. Born to a station and usually accommodated to our environment, we bear the whips and scorns of time with a complacence founded upon happy adjustment. But sickness and death, ubiquitous and uniformly disastrous to all, will ever call imperatively for aid; a call that cannot and will not be ignored so long as sympathy holds a place in human hearts.

II.

The remarkable advances gained by the medical sciences during the past half-century have, where applied, completely altered those psychological and economic relationships which prior to that period existed between patient and physician. That the concomitant industrial revolution, epitomized by the development and effects of the motor vehicle, has been a salient factor in these changes is everywhere apparent. Our entire manner of existence has been profoundly modified by the fabulous innovations of a mechanical era. The growth of specialism, in many minds comparable to the Lernaean Hydra, has long been held responsible for most of the real and supposed evils of present day medical practice. The dissipation of the personal equation in professional contact, the maldistribution of physicians through centralization, the increased cost of medical care, and many other calamities have been laid at its door. Yet specialism, at once the origin as well as result of material progress in any field of human endeavor, is an indispensable attribute of modern existence. If in the practical application of medical science it has become an evil—a giant weed "o'ergrown the garden,"—it is an unavoidable one.

The bulk of the medical practice of today is conducted by individual physicians under an independent fiduciary system. Financial adjustments calculated to meet a totally changed economic environment have not been generally effected, nor are they feasible under the present relationships of patient and physician. Modern business doctrines have been held inapplicable to the field of medicine as antipodal to the fundamental tenets of ethical and effective practice. The much-lamented tendencies of the existing forms of Contract Medicine to lower the quality of medical service have served to encompass the problem with difficulties which to the medical profession have appeared almost insurmountable. But the Titan Industry, reared in fields where success and power depend largely upon an astute manipulation of dollars and cents, labors under no such delicate qualms of conscience. Vitally dependent upon, as well as financially responsible for the health of its human units, it has long sought to escape from the employment of unorganized and therefore "inefficient" methods of traditional medical practice. The rapid spread of industrial medicine in all of its varied forms offers mute testimony for the practical expediency of the system from the economic standpoint. Hailed from afar with suspicion and disfavor by organized medicine as representing a commercialization of intangible and priceless qualities in medical practice, its extension has been none the less retarded.

In this age of mammonism the youthful science of economics has arisen to gargantuan proportions. Our entire social and industrial atmosphere is surcharged with intricate and speculative evaluations of *service*, *reward*, and *profit*. A grand galaxy of econmists, sociologists, socialists, and common reformers expose every fabric of our complicated civilization to studious and critical analysis. Medical service, an item of national expense of over three and a half billions of dollars annually, cannot escape the audit. Are these moneys wisely, impartially, and efficiently spent? Is service adequate; reward commensurate? The lay public, moved to querulousness through its economic vanguard of industrial pilots and in part by individual experience, senses a discrepancy.

In the light of such a perspective the medical profession stands in an uneasy posture. Mindful of its grave responsibilities, it has continued to guard zealously those time-honored principles which have so faithfully directed a justification of trust. In the pursuit of knowledge pertaining to the cause, prevention, and relief of disease, the indefatigable energy and unselfish devotion of its members have commanded the admiration

of the entire civilized world. There is, however, a growing realization that the fruits of these labors are not equally distributed, and for financial and other cogent reasons not easily available to the majority of the people. As may be readily surmised, the increased cost of medical care is not of necessity the only major factor in such a discrepancy, nor is there a dearth of adequately trained physicians to serve the needs of the public. Under the existing system of medical practice there lies between the physician and lay individuals a psychological drawbridge, kept open by the professional dignity of the former and by the untutored ignorance of the latter. Yet a bold adherence to professional modesty is an essential attribute of the physician who would safeguard the public from the manifest evils of charlatanry. And, until late years, lay education upon matters of health has been relegated to the vendor of fraudulent panaceas.

## III.

The average physician of today is not acutely aware of the hazardous and compromising exigency into which his profession has been forced by the subtle pressure of these various factors. Nor is he aware that in this era of scientific advance competent medical service cannot be afforded to all of the American people except upon a new economic basis, a basis which infers financial preparedness on the part of the patient and division of labor among the profession. Up to the present time the means of attaining such an end have been illuminated by only one proposal worthy of consideration as being suitable for widespread application. This method would provide for the employment of a form of local group practice supported by some degree of taxation analogous to sickness insurance yet divorced from the disability benefit features. Its introduction in a given community would, theoretically, depend upon local option; its success, upon local support. For such a system, generally applied, to be even remotely controlled by any agency other than a democracy of the medical profession would be uniformly catastrophic. It is essential that the policies of medical practice be directed by those upon whom that service must ultimately and vitally depend. And it is likewise necessary that in a given community such direction be accomplished through its local practitioners, for federalism and its satellite bureaucracy in medicine, as elsewhere, would serve to stifle every vestige of a necessary independence.

Plangent arguments directed against the theory of group medical practice have seemed to proceed largely from a just fear of so dire a contingency as *state* control. Fired by a flood of indignation at the prospect, they have to a certain extent exceeded the bounds of accurate and correlative reasoning. For can any greater indictment be made against the medical fraternity than that which implies that an optimum professional relationship between patient and physician is dependent upon individual pecuniary remuneration or that the innate sympathy, humanity, and forbearance of physicians would be dissipated by any other system? Freed from pressing economic uncertainties, what physician could not pursue with a happier assiduity those intellectual and altruistic aspects of his profession which point the way to truth and perfection? Again, it has been said that the care of the indigent should be a responsibility of the State. The medically indigent, comprising those who cannot pay for adequate service, represent an increasingly large number of persons. May the care of an entire group, identified by no certain criteria, be thus apportioned to State Medicine while in the same breath that system of practice is decried as inimical to the best interests of those who can pay? Surely a solution will not be found in such an inconsistency. Let us not forget that the welfare of the whole people must ever remain the highest trust of our profession. Let us not delegate this trust, in whole or in part. And let us not indeed sacrifice our most precious heritage upon the altar of a present expediency.

The issue is to be faced squarely. Its roots are solidly fixed in the fertile soil of a changing economic environment. A growth will be gradual but certain and it is vital to the welfare of our people that its initiation proceed from within the ranks of those who by every right shall direct its perpetuation. A complacent disregard of the juncture must provoke disaster. It has been said that

> "There is a tide in the affairs of men
> Which taken at the flood leads on to fortune;
> Omitted, all the voyage of their life
> Is bound in shallows and in miseries."

A duty lies before the medical profession. Its pathway is dimly lighted and marked with unforeseen dangers. Yet the masses of the

American people have still an unbounded faith in the altruism of physicians and confidence in their unselfish leadership. Our courage shall attest a tribute to those who have gone before, a legacy for generations to come.

## THE DIAGNOSIS AND TREATMENT OF DIPHTHERIA.*

LEE E. SUTTON, M. D., Richmond, Va.

Diphtheria is one of our most important communicable diseases, first, on account of the high mortality among the untreated cases, and, second, because the medical profession knows a great deal about this disease.

Before one is able to make a diagnosis of diphtheria, he should be familiar with its clinical picture. Diphtheria is a local infection characterized by the formation of a membrane deposit with a varying degree of dull redness and edema. From this local lesion a toxin is absorbed and carried by the blood stream throughout the entire body, with the result, in severe cases, of demonstrable cardiac damage, and neuro-muscular paralyses.

The onset of diphtheria is usually insidious, but may be abrupt. There are no characteristic symptoms unless malaise, lassitude, or restlessness accompanies a sore throat. Fever usually accompanies the infection. Occasionally, at the beginning of the disease before the membranes are formed, one may recognize a dull redness of the tonsils which may be diagnosed diphtheria through the aid of demonstrating the diphtheria bacillus by culture or smear, and the use of the Shick test. Membranes, as a rule, form early in the disease and are generally formed by the third or fourth day. The membrane is characteristic in that it is a laid-on membrane. At the very beginning it may be flaky, but as the disease progresses these flakes rapidly form a single membrane. The flakes when seen early in the disease overlie the deep crypts of the tonsils and may at this stage of development be fairly easily wiped off, presenting a picture resembling an acute follicular tonsillitis. The typical membrane of diphtheria is generally uniform and characteristic in that it is somewhat rounded, with sharply defined, elevated edges. The membrane is heaped up so as to form a thickness of at least one millimeter. The color is grey, or pearl grey, or it may vary from a dirty grey to a blackish color due to ingestion of food, medication, or to the escape of blood from beneath the membrane. The membrane is not easily detached and when it is removed it rapidly reforms. The membrane, upon being removed, leaves a more or less granulated bleeding surface with pin-point hemorrhages where the blood is escaping from the capillaries. The membrane usually removes intact and is not easily broken to pieces due to its elasticity and toughness. The location of the membrane in the throat is usually symmetrical, but may be unilateral in distribution, appearing most often over the tonsils.

Surrounding the membrane is often found a zone of deep redness, varying from two to four millimeters in width, also some swelling of the tonsils and surrounding tissues. The membrane, as time progresses, may become quite extensive, extending from the tonsils up on the faucial ring, soft palate, and uvula, reaching its height on or about the fourth to sixth day of the disease. The rapidity of extension depends a great deal upon the severity or virulence of the infection; the more rapid the extension the more severe is the infection. When the spreading is rapid, the membrane is not so thickened but filmy in character, and the redness much more diffuse. On the other hand, when the membrane is slow growing the redness around the membrane may barely be recognized.

Swelling indicates a severe type of infection. In some cases of diphtheria you may find the swelling more or less preceding the membrane. The throat or faucial ring may show marked swelling with very little membrane visible. Where the swelling has been marked it has been mistaken for peritonsillitis, but swelling in diphtheria is more elastic and less painful. The uvula may be markedly edematous, taking on a straw-colored appearance and completely obliterating the space between the tonsils. The tonsils may be so swollen as to occlude the faucial opening. By the time the swelling becomes extensive the membrane is visible and a diagnosis of diphtheria can be made. In severe cases swelling extends outwardly into the neck, involving the lymph nodes as well as the surrounding cellular tissue. It sometimes becomes so extensive as to reach to the level or beyond the angle of the jaw, extending downward to the first or second ribs of the chest. This edema is characteristic in that it is elastic and not as painful and brawny as that of a cellu-

*From the Pediatric Department, Medical College of Virginia. Read by invitation before the Danville-Pittsylvania County Medical Society, at Danville, Va., December 13, 1932.

litis due to a streptococcus infcestion. The swelling will disappear without abscess formation when the toxin is neutralized through antitoxin treatment and when there is no secondary invasion by other bacteria. The swelling of the neck may be limited to one side, when the severity of the infection is greatest on that side of the throat.

The symptoms that accompany a diphtheria infection vary a great deal, from that of the insidious onset where the membrane may have existed before any malaise, lassitude, or sore throat develops, to that where a patient may show fairly toxic symptoms with headache, fever, vomiting, with a certain amount of prostration. The disease may be ushered in with convulsions. Fever is usually present but rarely absent. As a rule the fever may be 102° F. or 103° F. at the onset, rarely 104° F. or above, and as a rule gradually subsides as the discase progresses, showing a fever of a degree or so in the later stages of disease. The fever curve is no guide to the severity of the infection, as is erroneously thought. Many of the laity think that it could not be diphtheria an account of an almost absent fever and lack of symptoms. Quite frequently, symptoms present at the onset subside as the disease progresses, so that the individual thinks he is getting well, to reappear in a few days with greater intensity. Lassitude, the most common of all symptoms, may be the only one present. In severe cases, prostration may be very marked, appearing during the latter days of the disease. Restlessness in sleep may be present and the patient may show a slight amount of delirium upon awaking, but it soon disappears. There may be a sleepiness, or dullness in the patient's disposition but the patient can be usually easily aroused unless the disease is markedly advanced and the patient is in a moribund condition.

Nausea and vomiting are found more often in severe cases. Constipation may be present and it is possibly due to a diminishing of the food intake. Diarrhea is rare. The appetite is variable. In children, abdominal pain and distress may be the first symptom. Sore throat usually accompanies the disease, especially in older children. The membrane may be quite far advanced before the patient complains, and soreness may be absent even in severe cases. Patients may complain of a rawness or dryness of the throat instead. When the pharyngeal wall is involved there is some dysphagia as also when there is marked swelling of the faucial ring. In most cases, where there is no edema there is practically no dysphagia. Occasionally, an eruption is present over the skin which is usually purpuric in character and may occur in severe toxic cases. Other eruptions are transient and are usually found on the extremities.

In advanced cases of infection of the throat, there is a peculiar, sweet, putrid odor present which some clinicians have claimed to be characteristic of diphtheria. This odor, however, may also be present in Vincent's angina or septic throat. The odor is attributed to saprophytic organisms which happen to be present.

Ulceration is not characteristic of diphtheria. When present it will be found in complicated cases. There may be a superficial ulceration in the severe diphtheria cases which will heal up within a week or ten days without any scarring. The course of the local infection is from two to eight days, rarely up to two weeks.

As the diphtheria progresses, toxemia increases; the patient loses his appetite, becomes more restless, and stuporous, with increased prostration. About the third, fourth, or fifth day of disease the neck may be swollen as well as the throat, the odor of the breath is foul, and hemorrhages may appear from under the membrane in the throat. Breathing becomes more difficult, due either to the marked swelling of the throat or possibly to an extension of the infection to or involvement of the larynx with accompanying cyanosis. Blood pressure becomes low; the pulse is weak and thready; the hands and feet cold; and the patient sinks into a lasting sleep. Consciousness is generally retained to the last. The patient can usually be aroused from the stupor and appears rational. Should the obstruction to breathing be relieved by tracheotomy, the patient will lose his cyanosis, and the skin will take on a pale ashen color.

### Diphtheria of the Naso-Pharyngeal Wall

When primary, it is often obscure and may become quite severe before the diagnosis is made, as the membrane formation is invisible due to its location in the naso-pharyngeal vault. As the disease progresses, the membrane will extend over the edges of the faucial ring on to the soft palate or pillars. By this time, the diagnosis can be readily made. Before the appearance of the membrane the patient may show toxic symptoms fairly well marked, with edema appearing in the throat and also in the

neck at the angle of the jaws. Nasal obstruction may be present as well as a discharge in the back part of the throat before visible recognition of the membrane. Naso-pharyngeal infection may be secondary to either faucial or anterior nasal diphtheria.

### Anterior Nasal Diphtheria

It may occur either primary or in combination with other forms. As a rule this type of diphtheria is mild and has a longer course with a period of greater contagiousness. The onset is quite mild and insidious as there is very little toxic absorption from this area. The toxic symptoms are usually mild or absent and the patient may be thought to be suffering from a mild acute rhinitis.

In the more active cases the discharge is more profuse and somewhat sero-mucoid or sero-sanguinous in character, occluding, the nostril and producing irritation around the nares and upper part of the lip. When this discharge is either wiped or blown out of the nasal passages, there will be seen a characteristic diphtheritic membrane on the turbinates, or septum or both. In the mildest cases the infection will be represented by a small amount of dry crust. The course in anterior nasal diphtheria may be prolonged or may extend fairly rapidly to the posterior nasal and faucial regions. Sometimes, the infection seems to jump over these areas and involve the larynx.

### Laryngeal Diphtheria

Here the infection may be primary in the larynx or from an extension of the nasal or faucial diphtheria. Toxic absorption is not marked from this region and the patient suffers chiefly from respiratory obstruction. Therefore, the toxic symptoms are usually mild. The first symptom that one is liable to obtain is that of a croupy cough. There may be a slight fever even up to 102° F. or 103° F., while, on the other hand, the fever may be absent. Hoarseness or aphonia is present and it may be so extensive as to bring about almost complete loss of voice. As the disease progresses, stridor begins to develop, indicating obstruction. A flapping membrane can sometimes be detected on inspiration or expiration. As obstruction increases, dyspnoea appears and the accessory respiratory muscles will be brought into play. There will be noted a suprasternal, infrasternal and intercostal retraction with each inspiration. As soon as the individual does not obtain enough air in the lungs, cyanosis begins and becomes quite marked. The patient becomes quite restless struggling for air. On account of difficult breathing, the patient refuses all water as the taking of it interferes with its breathing. These patients become somewhat dehydrated and crave fluids, and, when it is offered to them, will take a sip and push the container away. As time progresses, the patient is unable to rest, and sleeps only in naps on account of the marked dyspnoea. He becomes fatigued and, as his strength fails, his respiration becomes shallower, stridor less noisy; cyanosis begins to fade, struggling becomes less; the skin takes on an ashen pale color, and the extremities become cold. The patient soon lapses off into unconsciousness and death rapidly ensues.

Sometimes the cyanosis and stridor appear quite abruptly. The patient probably has had some inflammation which has been going on for some time, and there has been a sudden loosening of the membrane which is present in the trachea or larynx, producing an obstruction that brings about the acute development of symptoms. Upon examination of the larynx with a laryngoscope a typical membrane may be found lining the surface of the epiglottis, larynx, and trachea, as far down as one can see. The membrane, on being removed, will relieve the patient of obstruction, but it will soon reform. In some of the cases there may be present much edema as well as membrane. In these cases obstruction would be due to edema as well as to membrane. Occasionally, a patient may, upon coughing, produce a large cast, consisting of diphtheritic membrane, with much relief of obstruction.

### Pulmonary Diphtheria

Pulmonary diphtheria is rare and often is not diagnosed until quite late. When diagnosed there is generally present some laryngitis which will give to the attending physicians a lead to the diagnosis. This condition follows some other infection which has involved the respiratory tract, such as measles or whooping cough. Some cases, when not too extensive, get well, and those that die show at autopsy a diphtheritic membrane extending down into the smallest bronchi. The cause of death in these cases is due to either obstruction of breathing or bronchial pneumonia. The physical signs in these cases are the same as one would find in the case of a foreign body caus-

ing partial obstruction in a bronchus. There will be diminished breathing over the area of lung supplied by that bronchus or bronchi.

Diphtheria infection may be found on the skin where there has been a denuding of the epithelium, such, for instance, as secondary to burns, wounds, eczema, impetigo, and chicken pox. In these cases the lesions show a tough adherent membrane which may be confused with a slough. Diphtheria may also occur on the conjunctiva of the eyes and may become so extensive as to bring about some destruction of the cornea. Where there is an otitis media, a diphtheritic membrane may extend up the eustachian tube to the middle ear and the external canal. Occasionally, diphtheritic membrane may be found in the mouth or on the lips where areas of trauma have become infected with the organisms. Cases of diphtheria of the genitalia both of the vagina and the penis occur. The membrane of the penis is generally present under the prepuce and the penis will show marked swelling.

The conditions which are generally spoken of as septic diphtheria are generally cases of faucial diphtheria where there is a superimposed streptococcus infection. The streptococcic infection, in addition to its own toxemia, appears to make the diphtheria infection more severe.

There is often great difficulty in making a clinical diagnosis of diphtheria, for quite frequently in the throat there may be a concomitant infection with streptococci or some other organisms. Under these conditions the diagnosis will have to be made with reservations. If the infection is mild, a culture for diphtheria can be made in order to complete the diagnosis. However, when the infection appears advanced, treatment should be carried out as if the case was diphtheria, and the culture taken in order to make the diagnosis more complete. This taking of cultures has brought to recognition the mild catarrhal cases without membrane as well as the detection of carriers. Upon making the culture, care should be taken that the swab comes in immediate contact with the local infection, and must be smeared on Löffler's blood serum, properly made, which still shows moisture. The culture is incubated at a temperature about 35° C. to 37° C., and in about twelve to eighteen hours it is ready for reading.

A positive diphtheria culture from a clinical case completes the picture. A negative culture from a clinical case does not mean that the condition is not diphtheria, for there may be an error in the technique of making or reading the culture. However, on the other hand, in some cases not typical diphtheria a positive culture does not mean that the patient is suffering from diphtheria as the organism may be avirulent. Direct smears may be made from the membrane of the throat and examined for diagnosis. The difficulty here is that the bacilli may be confused with other resembling organisms that may be present. The Schick test may also be helpful in making the diagnosis. Theoretically a patient must have a positive Schick test in order to suffer from diphtheria; otherwise, he would be regarded as a carrier.

### Differential Diagnosis

When making a differential diagnosis of faucial diphtheria several conditions must be considered. At the beginning of diphtheria, the clinical picture resembles that of a simple follicular tonsillitis in that flakes of membrane may be distributed over the crypts of the tonsils. A high fever, with toxic symptoms, soreness of the throat and redness may easily differentiate the so-called tonsillitis from diphtheria. When the symptoms of tonsillitis are mild, it is quite difficult to differentiate the two diseases, with the result that a culture has to be taken in order to make the diagnosis. Within the next twenty-four hours, however, the patches which may be present in diphtheria coalesce and form one piece of membrane on each tonsil, while in tonsillitis the clinical picture usually remains the same.

A tonsillitis may extend into a streptococcic throat which at times has to be differentiated from diphtheria. In this condition there is more marked toxemia, showing symptoms of high fever, malaise, headache, and soreness of throat. Some dysphagia is present. The examination of the throat will show a uniform bright redness of the faucial ring and soft palate. A membrane is usually present, covering portions of the tonsils, or it may be so extensive as to extend on to the pillars or the soft palate. The membrane is more of a yellowish-gray in color and is somewhat easily wiped off from the underlying tissues, although in some cases it may be fairly adherent. It is laid-on membrane the same as diphtheria, but does not show the elevation or thickness, and

appears usually as a filmy membrane, with edges more or less blending with the tissues and not sharply defined. The edema of the throat as a rule is not quite so marked as in diphtheria. Edema may be present in the neck. When present, it is more of a brawny, painful swelling, resembling that of a cellulitis. Lymph nodes may become infected with streptococci, increasing in size and finally breaking down to abscess formation. Cultures taken from a streptococcic throat show a streptococcus instead of a diphtheria bacillus. As the disease progresses, the temperature curve disappears by lysis when no complications are present, with amelioration of symptoms. A persistence of temperature in a throat infection following administration of sufficient diphtheria antitoxin indicates that the temperature is not due to a diphtheria toxin.

Peritonsillar abscess quite frequently complicates a septic throat, and where the swelling is present before fluctuation sets in it may be confused with a phlegmonous type of diphtheria, when the membrane is not definitely visible. In peritonsillitis there is a high fever with much more dysphagia, and the patient is unable to open the mouth very wide, due to the pain caused by the infiltration present in the tissues. The redness, tenderness, and pain present in peritonsillar infection are more marked than that found in phlegmonous diphtheria. In the latter, the redness is a duller red color and not as marked, and the tissues are somewhat elastic and not so painful and tender; there is also not the pain on opening the mouth. Cultures will help to make the diagnosis, and those physicians who attempt to operate on phlegmonous diphtheria, mistaking it for an abscess, will find exuding a thin fluid with no pus from the incised wound.

An infection of the throat known as Vincent's is sometimes confused with diphtheria, but on close observation one can recognize that the membrane which is present is not a laid-on membrane but one that is lining an ulcerous area where destruction has taken place. This membrane, which is composed more or less of necrotic tissuse, is of a dirty greyish color and is fairly easily removed with the appearing of blood exuding from the area. In an uncomplicated case of Vincent's there is very little redness surrounding the membrane, although quite frequently a secondary infection will be present, usually streptococcic, and then there may be extensive redness of the neighboring tissues in addition to fever and soreness of throat. Fever is generally absent or very slight in an uncomplicated Vincent's throat, although there is slight to moderate soreness. The lesion when present on the tonsils is generally unilateral. If the gums are noted, there will be some ulceration with necrotic membrane formation at its junction with the teeth. The odor of the breath is quite foul in these cases. A smear made either from the necrotic area of the tonsil or from the gums will show fusiform bacilli with the typical spirilla. There are some areas, clinically Vincent's, where the fusiform bacilli and spirilla are with difficulty obtained. Vincent's areas may be present over other parts of the mucous membrane of the mouth.

Mucous patches in syphilis also show a necrotic membrane lining ulcers. The margins of the ulcers are usually irregular in shape and the exudate or membrane blends more or less with the tissues. These areas may be found scattered over the mucous membrane of the mouth and throat where you are not likely to find diphtheria present. Other evidences of syphilis are usually present, which, along with the history, will determine the diagnosis. In malignant syphilis there may be marked destruction of the mucous membrane and the underlying tissue where the ulcer formed shows sharp edges and is lined with an adherent greyish white membrane.

In infants, thrush has been found present over the tongue and pharyngeal wall and may be confused by some with diphtheria. Thrush presents somewhat of a filmy, flaky, whitish exudate with or without very little local reaction and no ulceration, which can be fairly easily removed from the underlying tissues, and upon examination under the microscope there will be seen the mycelium and gonidia of Oidium albicans. Localization of thrush is not similar in distribution as found in diphtheria.

Trauma, either physical or chemical, may denude the epithelium of the mucous membrane, with the formation of a pseudo-membrane. In these cases the membrane is lining an ulcer. The membrane is adherent and can be removed fairly easily. There is very little reaction around the areas of trauma except a narrow zone of redness. There is no progressive extension of these lesions after they once

form. History of the case as well as localization of the lesion is helpful in arriving at the diagnosis. There is practically no toxic reaction in these cases. Following tonsillectomy, there is found a greyish membrane lining the tonsillar fossa or pillars should the latter be traumatized. Should the lining membrane become tough, quite adherent, and extend beyond the area of physical trauma, diphtheria should be suspected. Cultures must be resorted to and should have been taken before and after tonsillectomy in order to have as much data as possible about the condition of the throat in those patients where there is a possibility of exposure to diphtheria.

Chemical trauma can be produced by the application of strong antiseptics to the mucous membrane of the throat or by the ingestion of bichloride of mercury. Where there has been an applicatiton of a strong antiseptic an ulcer covered with a greyish membrane or slough will correspond to the area treated. This condition is found fairly frequently in those cases where a physician has treated tonsillitis with such a strong antiseptic as iodine. Other strong antiseptics will produce the same result. Where a strong acid or alkali has been ingested, it will be found that over the area of mucous membrane which has come in contact with the strong chemical there will be a traumatic ulcer covered with an adherent greyish membrane. Localization of the membrane in these cases will usually be on the pillars and soft palate which, instead of the tonsils where diphtheria is usually found, are the most exposed areas.

A picture of ulceration with membranes over the faucial ring, pharynx and tonsils may be present along with marked ulceration of the gums around the teeth which will be lined with an adherent necrotic membrane or slough. There will also be swelling and a slight amount of bleeding around the gums when the membrane is removed. These patients with such a picture will have a very foul odor to their breath. Having seen such a case, the diagnosis of late bichloride ingestion can easily be made. The patient may be unaware of mercury poisoning, but, upon questioning, there may be obtained a history either of taking tablets by mouth, or by taking vaginal douches with the idea of preventing conception, not realizing the effect mercury may have on the body. Dysphagia is usually marked in these cases and the patient drools quite extensively. As a rule there is no fever unless secondary infection has taken place.

In the latter stages of acute infectious diseases and toxemias, such as pneumonia, typhoid, etc., ulcerations may be found in the mouth or throat. These ulcerations are generally superficial and are covered with a greyish thin exudate which does not show the characteristics of a diphtheritic membrane. These lesions are probably produced by the drying of the mucous membrane of the throat which is brought about by the mental torpor and mouth breathing of the patient, plus a low grade infection due to a lowered local resistance.

Ulcerous membranes may also be present in severe anemias and leukemias due to faulty nutrition of the localized tissues plus a low grade infection or trauma. These areas are generally where trauma is liable to be present. The culture is negative for diphtheria. The membrane found in those cases diagnosed agranulocytosis belongs to this group.

Tumors and tuberculosis are rarely confused with diphtheria, as the two conditions show in addition to ulcerations a certain amount of firm induration of the tissues which we do not find in diphtheria. Lymphosarcoma or carcinoma is the most frequent tumor of the tonsils.

In any case where there is a nasal discharge sero-sanguineous in character with crusting, nasal diphtheria or foreign body must be considered. When diphtheria is present there is more likely to be an excoriation of the upper lip at the nares. The exudate should be removed by swabbing and the nose examined for the presence of a membrane or foreign body. If a membrane or crust is present, a culture should reveal whether diphtheria bacilli are present. Cultures should be taken from every chronic nasal discharge.

A differential diagnosis of laryngeal diphtheria will be found at times to be difficult. First of all, when obstruction is present it should be noted whether it is inspiratory or expiratory, in order to determine whether the obstruction is above the larynx, at the larynx, or below the larynx. It is known that when the obstruction is at or above the larynx there is chiefly inspiratory obstruction, and when below the larynx and trachea it is expiratory.

Such infections that produce marked swelling of faucial ring, retropharyngeal abscess,

phlegmon of the epiglottis or glottis, as well as foreign bodies in these areas, will produce the inspiratory obstruction. Pneumonias, asthma, foreign body of the lung will bring about expiratory obstruction, while pressure outside the trachea, such as enlarged glands or stenosis, will give both inspiratory and expiratory obstruction.

All cases of laryngitis should show symptoms of a croupy cough and aphonia; therefore, an obstruction with stridor plus the symptoms of a laryngitis localizes the infection at the larynx. Diphtheria should be differentiated from the other acute infections of the larynx, spasmodic croup, and foreign body, as diphtheria infection is an acute infection. A foreign body can be ruled out by history and also by the abrupt onset of choking. Spasmodic croup may be differentiated from the acute infections of the larynx by its sudden, abrupt onset, short duration of obstruction, with an abrupt cessation of the symptoms. The obstruction is purely inspiratory and the patient does not suffer any toxic symptoms, such as fever, malaise, etc. Laryngismus stridulus can be detected by the inspiratory spasm of the larynx accompanied by the other symptoms of tetany, such as convulsions, positive Chvostek, Trousseau, and Erb's increased electrical irritability signs, decreased blood calcium and others.

In many cases of acute laryngeal infections it is almost impossible to differentiate between a diphtheritic and a streptococcic laryngitis, as the clinical picture is about the same except for the presence of a high fever and more toxemia in the streptococcic cases. The onset in both of these cases is gradual to almost complete obstruction. Diphtheria membrane present in the nose and throat will help make a diagnosis of diphtheria laryngitis. Since in the majority of cases it is impossible to determine which infection is present, the treatment of the patient should be the same for both as if recognized for diphtheria. A previous immunization against diphtheria either through toxin-antitoxin or toxoid injection followed by a negative Schick test, which every patient should have had, will throw the diagnosis to a streptococcic laryngitis. Laryngoscopic examination is helpful in making the differential diagnosis.

Laryngitis sicca and tracheitis sicca will give the same symptoms of obstruction in these areas as diphtheria membrane will. Culture and direct examination will help differentiate the conditions from diphtheria. Laryngoscopic examination of the larynx and trachea will show dried mucus and crusts lining the lumen, bringing about the narrowing and consequent obstruction. These cases as a rule will show a diminution of the lymphoid tissue of the naso-pharyngeal region. Streptococcus mucosus is the organism that is generally cultured from this condition.

Edema of the larynx due to angioneurotic edema should show some signs of edema elsewhere or stigmata indicating a hypersensitiveness.

Phlegmon of the glottis and epiglottis may be diagnosed by the inspiratory obstruction and palpation of the swelling with the finger. If the epiglottis is markedly swollen, it can be seen when the mouth is held open, as a straw colored, edematous mass protruding up into the faucial ring.

Retropharyngeal abscess has such a characteristic obstruction to breathing that once the diagnosis is made it is generally made thereafter. On looking into the throat, with the base of the tongue held down with a tongue depressor, a swelling over the posterior wall can be detected. Palpation of a swelling over the pharyngeal wall with the finger completes the diagnosis. A cervical lymph node enlargement usually accompanies the phlegmon and the retropharyngeal abscesses.

### Treatment

There is a specific treatment for diphtheria in antitoxin, and when a sufficient amount is given at the beginning of the disease there should be a cessation of the disease. Antitoxin neutralizes the toxin that is given off and has no direct effect on the bacillus itself. There is no harm in having a large amount of antitoxin in the blood stream or tissues; therefore, enough antitoxin should be administered to completely neutralize the toxin that is present. A large dose will not do any harm, but may do a great deal of good should there be more antitoxin needed than is anticipated. So rapidly is the produced toxin absorbed by the tissues with its destructive action, and since one cannot always estimate the amount of infection present, early administration of antitoxin is important, as antitoxin will not neutralize toxin already attached to the tissues.

Antitoxin may be administered through three methods: injection by way of the blood stream, into the muscles, and, into the subcutaneous tissue. The diffusion of antitoxin through the blood stream is greater than when it is injected by the intramuscular method, which, in turn, is greater than when given subcutaneously. There are more reactions when the intravenous method is used than by the intramuscular method; therefore, the latter is the method of choice for the administration of antitoxin in the average case.

There is a great variation in the severity of the diphtheria poisoning due to some strains of diphtheria bacilli giving off a toxin with a much higher degree of toxicity. Some patients are able to produce more rapidly immune bodies for neutralizing the toxin. In cases where there is more rapid development of the disease they should have more antitoxin than where development is slow. A disease that has been progressing for some time needs more antitoxin than those cases in which the disease is just beginning. The location of the process also influences the toxemia, for there is more rapid absorption of toxin from diphtheria situated in the faucial or post-nasal vault than in cases where the inflammation is located in the larynx, trachea, bronchi, or anterior nares. Absorption from the larynx and trachea is greater than from the anterior nares.

In treating a patient with diphtheria, the disease should be treated rather than the patient. The dosage should not be regulated by the size of the patient, for a smaller patient will require the same amount of antitoxin as a larger patient, the size of the membrane being the same in each. There have been many suggestions outlined as to the amount of antitoxin to be given in various cases. For the average run of cases the following schedule may be used: for anterior nasal diphtheria, 5,000 units of antitoxin intramuscularly; for laryngeal, tracheal and bronchial diphtheria, 20,000 units intramuscularly or intravenously; for mild faucial, at the onset, 10,000 intramuscularly; for moderate faucial and post-nasal where the membrane has not extended into the faucial region 20,000 units intramuscularly; in severe faucial, 40,000 units of antitoxin intravenously. If unable to give antitoxin intravenously, at least 60,000 units should be given intramuscularly, in order to get the more rapid absorption of the amount of antitoxin needed to save the patient's life. When the larger doses are given there is no need of further administration of antitoxin as the greatest abundance has been given. It should be the aim of the physician to give all of the antitoxin needed in one dose.

Before administering any antitoxin, which is usually given in a vehicle of some foreign protein, anaphylactic shock should be guarded against. The patient should be first tested to determine any susceptibility to the foreign protein that is to be administered. About one-twentieth cubic centimeter should be injected intradermally and a local reaction watched for in the next twenty minutes. It will be found that if the patient is sensitized to the protein there will appear usually within ten minutes an area of one centimeter or more of induration or a wheal with varying degrees of redness, or an area of redness at least several centimeters in diameter. The reaction is then considered positive. If the induration is no larger than the bleb produced by the injected fluid and the redness does not extend for more than an area of several centimeters in diameter, the reaction is considered negative and the patient may then be given antitoxin. Should the reaction appear positive, showing the patient sensitized, he must be desensitized before antitoxin can be given. Desensitization may be carried out by injecting a small amount of antitoxin first intradermally, then subcutaneously, intramuscularly, or even intravenously. The size of the initial desensitizing dose is dependent upon the amount of reaction obtained by the sensitization test. The dose should never be a greater amount than would produce a slight local reaction. Every twenty minutes following the preceding injections, the succeeding injections should be at least doubled until the whole amount of antitoxin has been given. When the sensitization is slight, a more rapid desensitization may be carried out by the injection of larger doses.

When the sensitization reaction is that of a wheal no larger than two or three centimeters, the desensitization test may be carried out by the injection at twenty-minute intervals of the same amount of fluid subcutaneously, to be followed by one-half cubic centimeter subcutaneously, one-tenth cubic centimeter intramuscularly, one cubic centimeter intramuscularly, and then the rest of the material. Should intravenous therapy be desired, the injection of one cubic centimeter intramuscularly should

be followed by one cubic centimeter intravenously to be followed by the whole amount intravenously, the fluid to be injected slowly and at body temperature. When an Arthus reaction is produced which consists of an indurated or swollen area involving either a portion of the arm or the whole arm, the initial desensitizing dose must be much smaller than the sensitization dose, anywhere from one-hundredth to one-thousandth of a cubic centimeter subcutaneously, depending upon the amount of reaction produced. Diluting the serum with normal saline will bring about the desired dilution. The rapidity of increasing the doses depends upon the reaction to the previous doses. A reaction means a too rapid increase of the amount of serum injected. Since some deaths have occurred in sensitized patients by the injection of antitoxin, it is only fair to the patient that before antitoxin be injected they be tested for sensitization. Every possible chance of producing death should be eliminated.

The patient should be put to bed, the length of time remaining there depending upon the severity of the disease. As long as there is any chance of the patient showing such sequelae as paralysis or cardiac damage he should not be allowed up. Fluids should be forced at the beginning of the disease and the diet should be bland, consisting chiefly of carbohydrates. The ordinary hygiene of the sick room should be carried out. As the patient improves more liberties may be allowed.

The local diphtheritic lesion is not affected by the antitoxin. The mouth may be kept clean with mild gargles or irrigations, but in cases where there is much struggling by the child against treatment it should be omitted, as the benefit derived is not worth the damage done by the struggling the patient goes through. Dryness of lips and gums may be prevented by the application of liquid albolene or mineral oil. Ice bags may be applied to the neck for comfort. Where the membrane is loose and somewhat occludes the throat it may be picked off.

In the treatment of laryngeal cases intubation and tracheotomy may have to be resorted to. The choice of operation depends a great deal upon the case treated. The indications for relief by intubation and tracheotomy are when the patient shows stridor which is progressing, accompanied by beginning cyanosis or fatigue. Waiting later to intube such a patient would mean a weakening or fatiguing of the patient, with the result that broncho-pneumonia may more easily set in. Broncho-pneumonia is to be avoided as it is the most frequent cause of death in these patients. Forcing fluids in these cases is very important, particularly in those cases where there has been refusal of fluids for twenty-four to forty-eight hours. When the attendant or nurse is unable to feed the patient by spoon, then nasal feeding, rectal taps, or hypodermoclysis may be resorted to. A large majority of the cases can be fed by the mouth either by spoon feeding or by drinking from a cup, when the procedure is carried out by an attendant who knows something about the care of such patients. When a patient is intubed or tracheotomized, the tube should not be removed until the patient has shown a cessation of the local infection. If, upon removing the tube, it is found that the stridor still persists the tube should be reinserted. As a working rule, it will be found that little is to be gained by removing the tube before five days after insertion.

Laryngeal obstruction from diphtheria membrane has also been relieved by removal of the membrane by means of a suction apparatus. This method is quite successful when the obstruction is due to membrane alone and not accompanied by edema.

## THE CAUSES AND TREATMENT OF UTERINE HEMORRHAGE.*

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One of the most frequent complaints encountered in gynecological practice is abnormal uterine bleeding. The bleeding, of course, is only a symptom and always necessitates a thorough investigation in order to determine the underlying cause. Miller[1] calls attention to one of Lawson Tait's counsels to the effect that the practitioner neglects his duty who undertakes the treatment of menorrhagia without informing the patient of the utter uselessness of any treatment until there is a clear perception of the condition present.

Abnormal uterine bleeding may assume several characteristics to which it is customary to attach various terms. The flow may occur periodically at the time of the regular menses, but it may be unusually profuse or prolonged —menorrhagia; or the periods may occur too frequently—polymenorrhea, while it may occur

*From the Department of Obstetrics and Gynecology, University of Virginia.
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at irregular intervals between the periods—metrorrhagia. Although some of the conditions causing abnormal bleeding tend to have a characteristic bleeding abnormality, on the whole the type of the abnormal bleeding is of but little differential diagnostic importance.

For the purposes of this discussion, hemorrhage of uterine origin may be considered under four general groups: first, those associated with the accidents or diseases of early pregnancy; second, a miscellaneous group of disorders, both pelvic and general; third, tumors; and, lastly, functional hemorrhage.

### Early Pregnancy

The accidents of early pregnancy commonly give rise to abnormal and often excessive uterine hemorrhage, and this possibility must always be considered when the patient is in the child-bearing age, for at times pregnancies are found when least expected. Prolonged or profuse bleeding appearing suddenly is always suggestive of an early abortion; while persistent although slight uterine bleeding is a common finding in ectopic gestation, particularly after the death of the fetus. Ectopic pregnancy should always be considered in suspected abortions, and, unless the diagnosis is obvious, an examination should be done to eliminate this possibility. Hydatidiform mole commonly first manifests itself by uterine bleeding, the condition usually being mistaken for an abortion, and not until the passage of a chorionic vesicle is the true nature of the condition realized. Closely allied pathologically with hydatidiform mole is the malignant tumor arising from chorionic epithelium, variously designated, but perhaps better known as chorioepithelioma. This condition only occurs after abortion, full-term pregnancy, or mole, although the time of its appearance is variable. Its most common manifestation is uterine bleeding, although this is not invariably the case, as sometimes the appearance of metastases to the lung, vagina or brain is the first obvious evidence of the disease. Excessive bleeding occurring some months after abortion, mole or full-term pregnancy is suggestive of chorioepithelioma, although in the vast majority of such instances it will be found to be due to the retention of small placental fragments.

### Miscellaneous Disorders

That uterine bleeding may be a manifestation of various general systemic disorders is fairly well recognized. Of the various diseases, to mention only a few, it may occur in hypertension, arteriosclerosis, syphilis, anemia or acute and chronic infectious diseases. In these instances the attention should be directed toward the treatment of the systemic disease, although if the loss of blood of itself is endangering the life of the individual, measures must be instituted for the control of the bleeding, and at times for more accurate diagnosis.

Among the miscellaneous pelvic conditions pelvic inflammatory disease is one which may be associated with bleeding. Fluhmann,[2] in an analysis of cases of uterine hemorrhage, found that 16 per cent were due to pelvic inflammatory disease of gonorrheal origin, while in an analysis of instances of pelvic inflammatory disease, 41 per cent of the individuals complained of uterine hemorrhage of some type. The factors which he felt played a part in the production of the bleeding in these individuals were interference with uterine contractions from adhesions and malpositions, pelvic hyperemia, endometritis, ovarian deficiency induced by chronic peri-oophoritis and hyperemia, and corpus luteum abscess formation. The treatment in these cases should, of course, be directed toward the treatment of the pelvic inflammation, as the bleeding is only one of the symptoms of the disorder.

Tuberculosis of the endometrium may also manifest itself by uterine hemorrhage, the diagnosis being established by the associated findings or curettage, with the treatment depending on the other findings in the case.

Of the other pelvic conditions which may cause bleeding, simple benign erosions of the cervix may be mentioned. Benign erosions may cause slight vaginal spotting between periods, but one should always be extremely cautious in ascribing such an occurrence to a simple benign erosion, and one should never be satisfied with such a diagnosis until repeated biopsies have eliminated the possibilities of an early carcinoma, or the lesion has responded to the simple methods of treatment, such as cautery.

Retroversion of the uterus is sometimes mentioned as a cause of profuse or prolonged periods, but, in my experience, practically only does so when associated with a puerperal subinvolution or a pelvic inflammatory process. In the former, manual replacement, position exercises, oxytocics and rest frequently effect

a cure, while in the latter treatment is directed toward the inflammatory process.

Senile or atrophic vaginitis with its adhesions, while obviously not uterine in origin, is commonly associated with more or less vaginal bleeding, and usually occurs after the menopause. Its diagnosis is obvious on examination, although its treatment is difficult and generally unsatisfactory.

### Tumors of the Uterus

Perhaps the most common cause of uterine hemorrhage is tumors of the uterus. Myomatous tumors have menorrhagia as their most characteristic symptom—excessive and prolonged menstruation, usually gradual in development. Bright red blood with clots is commonly present. Polyps arising either from the cervix or cavity of the uterus may give excessive menstruation, but are more apt to give intermenstrual spotting. The treatment of fibro-myomata of the uterus requires a nicety of judgment. When possible, myomectomy is the preferable method in the child-bearing woman in whom it is desirable to preserve menstruation and the child-bearing function. Fibroids not larger than a three-months' pregnancy in which there are neither associated adnexal disease, adhesions, degeneration, incarceration or pressure symptoms and which are neither submucous nor pedunculated, are safely treated with intra-uterine radium, the radium application always being preceded by curettage to eliminate the possibility of malignancy of the endometrium. Radiation by means of X-ray may also be used for the same purpose, but even here it is wiser to precede the radiation by a diagnostic curettage. All others are best treated by hysterectomy, remembering that hysterectomy is preferable to castration doses of radiation in the younger woman, for although menstruation is lost, if the ovaries can be preserved, the woman is at least spared the possible discomforts of the symptoms of a premature menopause.

As far as the life of the individual is concerned, the most important type of uterine bleeding is not so much the profuse hemorrhage quite common in myomatous tumors and accidents of early pregnancy as is the presence of a slight bloody spotting from the vagina following intercourse or douching. In the former instance it is spoken of as coitional hemorrhage, and this so often is the first noticeable symptom of one of the most devastating diseases to which the woman is subject—carcinoma of the cervix uteri. Of course, it may be due to other and simpler lesions, such as superficial erosions, benign cervical polyps, or senile vaginitis, but the significance of the symptom should not be overlooked and should always indicate a careful vaginal inspection and examination. Obviously, of course, the symptom is without significance at the time of defloration and the first few intercourses thereafter. In others an occasional bloody spotting between periods gradually becoming more abundant and persistent is the first indication, and thus metrorrhagia becomes one of the most important symptoms in the field of gynecology. Only in prompt diagnosis and early treatment is there hope for the life of individuals with carcinoma of the uterus. Any abnormality in the menses, particularly spotting between periods, always indicates a careful pelvic examination, and if a diagnosis cannot be made, a liberal biopsy and curettage should be done for microscopical examination of the tissues. The more difficult it is to establish the diagnosis of cancer, the more important the diagnosis becomes, as it is in this stage that treatment is important and offers hope for the life of the individual. The everting cauliflower types are easily diagnosed, while the inverting type is more difficult, and a glandular carcinoma arising from the endocervix may often only be determined by curettage of the cervical canal. When constant and profuse bleeding, foul watery discharge, and pain have appeared, the disease is often hopeless and treatment may be only palliative.

Except in instances of post-menopausal bleeding, adenocarcinoma of the endometrium can ordinarily only be definitely diagnosed by an examination of the uterine scrapings, a reason why curettage is so important in bleeding cases. Carcinoma of the fundus may occur at any age, but seems more constant in the older woman past the menopause. Sarcoma of the uterus is usually a microscopical diagnosis, and in its clinical picture differs but little from carcinoma of the fundus. In adults it frequently appears as a malignant change in a myomatous tumor, and a fibroid which begins to grow and give bleeding after the menopause is suggestive of a sarcomatous change.

Cancer of the cervix is today in this country generally treated by radiation with radium and X-ray, preferably administering the

course of deep X-ray therapy first, to be followed by radium application to the cancerous cervix. Cancer of the fundus of the uterus is not as frequent as cancer of the cervix, gives symptoms earlier, grows slower, and invades and metastasizes later, so that it can frequently be cured by complete hysterectomy. Radical hysterectomy, when not contraindicated by the general condition of the patient or the extension of the tumor, is the preferable method of treatment, although, unfortunately, many of these patients are elderly and obese, frequently with degenerative diseases, so that at best they are poor operative risks. Intra-uterine radium and deep X-ray therapy are fairly satisfactory substitutes when operative procedures are not advisable.

### Functional Hemorrhage

In addition to these instances of known disease causing abnormal bleeding, there is a group of individuals with abnormal uterine bleeding, for which no obvious cause can be found. We have been accustomed to speak of this group as functional bleeding, idiopathic hemorrhage, or menorrhagia of undetermined or endocrine origin. It is this general group of cases about which there has been so much discussion in recent times in association with the newer knowledge of menstrual physiology. These cases may occur at any time during the child-bearing age, for it is during the reproductive era of life that these disorders seem to be limited. It is particularly apt to occur at the beginning and end of the reproductive period—puberty and the menopause. Novak[3] states that about 50 per cent of these cases occur at or near the menopause, and about 5 to 10 per cent appear at or near the age of puberty, while the remainder may be encountered at any time during the reproductive span. The bleeding seems to be most often of the menorrhagic type, although the metrorrhagic variety is not uncommon. At times there may be a prolongation of the interval between periods followed by excessively profuse and prolonged periods. One such individual under observation at the present time only menstruates about every four or six months, but when the periods do appear, they are unusually profuse and commonly require treatment for control of the blood loss. Obviously this type is easily and frequently confused with abortions, although relative sterility is the rule in individuals with functional disorders of menstruation.

The endometrium in cases of functional bleeding may present variable pictures, although the most common is an enormous thickening and overgrowth of the endometrium, while in some the endometrium seems of usual quantity, and in still others quite scant. Microscopically it commonly shows hyperplastic changes and cystic dilatation of the glands, with the glandular epithelium showing an absence of secretory activity. To this the term "swiss cheese" pattern has been applied, and the condition is usually spoken of as a hyperplasia of the endometrium or hyperplastic endometritis. When the ovaries are examined in these cases it is common to find a persistence of unruptured Graafian follicles and an absence of corpora lutea, thus suggesting an excessive follicle stimulus.

The pathological report of chronic endometritis in these instances is still often seem, although it is now believed that an endometritis, except in association with abortion, pregnancy, foreign bodies, trauma, gonorrhea and tuberculosis, is a very rare affection. So that in most cases to attempt to explain abnormal bleeding on the basis of an endometritis, except in the above conditions, is hardly justifiable. Oftentimes, the changes noted in the endometrium and reported as chronic endometritis, are merely physiological changes of the normal menstrual cycle.

Glandular hyperplasia or hyperplastic endometritis, characterized by an excessive proliferation of the endometrium and by the "swiss cheese" pattern of the glands, has at times been looked upon as a distinct clinical entity, but it is now generally believed that this is only a manifestation of some aberration of the glands of internal secretion, which seem to regulate the menstrual process—notably the ovaries and the hypophysis. Hofbauer[4] regards the hyperplasia as a manifestation of overactivity of the anterior pituitary lobe, having reached this conclusion by treating guinea pigs parenterally with anterior pituitary derivatives, and producing conditions in the uterine mucosa and ovaries similar to those observed in endometrial hyperplasia in women.

Perhaps a brief resumé of the menstrual cycle and its associated changes may not be amiss. After menstruation the follicles begin to develop, while one of them goes on to full

maturity. Under the influence of the follicle hormone, the endometrium undergoes a slow developmental process (post-menstrual and early interval phases) during which time no secretory activity in the glandular epithelium is seen. The follicle ruptures some time during the intermenstrual period (12th to 14th day), following which the corpus luteum develops at the site of the ruptured follicle, reaching maturity at the onset of the next menstrual period. Under the influence of the corpus luteum hormone, or progestin, the endometrium continues development, assuming the pre-menstrual characteristics, with increasing secretory activity in the gland epithelium. In functional hemorrhage the follicle does not rupture, which means an absence of the corpus luteum, the follicle continuing to secrete its hormone, so that there is an abnormal non-secretory development of the endometrium. The development of the Graafian follicle seems dependent upon an anterior pituitary hormone, Prolan A, while development of the corpus luteum also seems dependent upon an anterior pituitary hormone, the luteinizing hormone, or Prolan B. Thus the anterior pituitary has been dubbed the "motor of the ovary." The underlying cause of the bleeding in some of these instances is probably an imbalance of the motivating hormones in the anterior lobe of the pituitary with an absence of the luteinizing factor.

The presence of the hyperplasia of itself does not necessarily seem to be the immediate cause of the bleeding. It has been suggested that local necrotic areas in the endometrium may be the source of the bleeding and it has been mentioned that the possible presence of some local biological factor in the endometrium, which increases the permeability of the blood vessels may be the immediate cause.

At times these individuals show definite evidence of a hypothyroidism, while at other times there is a definite response to thyroid administration even though the basal metabolism determination may be well within the limits of normal. Only recently an individual was under observation for profuse exsanguinating uterine hemorrhage, who, on examination, presented the picture of myxedema. The response to thyroid therapy was rapid and effectively controlled the uterine bleeding. Waters and Williams[5] have recently emphasized the role of hypothyroidism in menorrhagia, reporting cases demonstrating improvement following thyroid administration, and, incidentally, they intimate that the importance of the basal metabolic rate has been over-emphasized in the diagnosis of thyroid activity.

The attempts at treatment of functional uterine bleeding should be preceded by a complete and thorough investigation of all the body systems, with particular reference to the endocrine glands, with the institution of any appropriate therapy justified by the findings. The necessity for the treatment and the type of treatment in these cases depend upon the age of the individual and the severity of the hemorrhage. Certain of the mild cases often correct themselves spontaneously without the necessity of treatment. When the bleeding is alarming and exsanguinating, curettage and blood transfusion often offer the best method of immediate control. In all cases a curettage both for diagnostic and therapeutic effect is probably advisable in order to eliminate the possibility of local pathological lesions. The relief following curettage is usually only temporary and the bleeding commonly recurs at some later date. In young individuals in whom it is desirable to preserve the reproductive function, the control of the bleeding often presents a perplexing problem. If a disturbance of thyroid function is found, it should be appropriately treated. In hypothyroid states, where bleeding is particularly apt to occur, the administration of thyroid extract is often effective and, at times, is even successful when the basal rate is well within the accepted limits of normal.

A method of organo-therapy recently introduced is the administration of the luteinizing hormone of the anterior pituitary. These preparations are now available and are administered intramuscularly for from one to five successive days, beginning at the onset of the period. Novak and Hurd[6] have reported fifty-one cases so treated in which the bleeding was controlled in forty-four instances. The rapidity of the response is sometimes surprising, although at present there is not much evidence to show that it is of permanent value. At any rate it offers a method of treatment for these young women which may postpone or entirely eliminate the necessity for radium treatment, and thus is surely worthy of trial. Intrauterine radium in the treatment of functional bleeding in young women should be used re-

luctantly, and, when used, the dosage should be small, as it is wiser to repeat the application if necessary than to administer a castration dosage. Three or four hundred milligram hours should be about the maximum dosage in young girls, bearing in mind, and so advising the patient, that a repetition of the treatment at some later date may be necessary. Hysterectomy for the control of functional bleeding in young women is hardly to be considered, although it does seem preferable to large castration dosages of radium, as the ovaries could be preserved, and the symptoms of an artificial menopause averted.

In the older women, those approaching the menopause, the method of controlling the bleeding is not so important, as the reproductive life of the individual is passed. While the medical attempts at treatment may be tried, at this age the necessity for the elimination of malignancy is increasingly important. The attitude that excessive bleeding at the menopause is abnormal should be adopted, and, while it does not necessarily mean cancer, the possibility should always be eliminated by diagnostic curettage and biopsy of the cervix. Radiation with either radium or X-ray form excellent means of therapy in these individuals, once the possibility of malignancy has been eliminated. If the contra-indications to radiation are sustained, the risk with these methods is minimum and the results eminently satisfactory.

### Post-Menopausal Bleeding

Bleeding after the menopause (amenorrhea for six months to one year) should always be looked upon as distinctly abnormal, and the axiom that all post-menopausal bleeding should be considered as due to malignant tumors until proven otherwise is undoubtedly justified. Kanter and Klawans,[7] in an analysis of ninety-eight instances of bleeding after the menopause, found 68 per cent were due to malignant tumors, while a variety of miscellaneous conditions, among which were granulosal cell tumor of the ovary, senile vaginitis, fibromyomata of the uterus, cervical polyps, foreign bodies, and non-specific ulcers, accounted for the remainder. A well recognized, although rare, cause of post-menopausal hemorrhage is found in tumors, mentioned above, which develop from the granulosa cells in the ovary, and which induce active proliferative changes in the glandular and stroma elements of the endometrium. Such tumors are known as granulosal cell tumors or granulosal cell carcinomata, as they are often considered to be malignant. Uterine bleeding is a common accompaniment of these tumors. Obviously the treatment of post-menopausal bleeding depends on the condition causing the bleeding, and is the recognized treatment for those conditions.

### Summary

The common causes of uterine hemorrhage have been enumerated and discussed under the general headings of accidents of early pregnancy, miscellaneous general and pelvic diseases, tumors, and functional bleeding.

The necessity for eliminating malignant diseases in instances of abnormal bleeding and the importance of early diagnosis and treatment in cancer of the uterus have been stressed.

The present assumed causes and recognized methods of treatment of functional uterine bleeding have been reviewed.

The significance of post-menopausal bleeding has been emphasized.

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## PROBLEMS IN THE EDUCATION OF NURSES IN VIRGINIA.*

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At the hospital conference held in Gastonia, North Carolina, in 1929, it was my privilege to read a paper[1] on hospital management, which included a discussion of the education

*Address of the President of the Virginia Hospital Association delivered at the Annual Tri-State Hospital Conference, Charleston, S. C., April 6, 1933.

1. Transactions of the North Carolina Hospital Association, 1929.

NOTE: For statistical data on nursing education see publications by the National League of Nursing Education, the Division of Statistics of the United States Department of the Interior, and the report of the Committee on the Cost of Medical Care.

of student nurses. It is now my desire to open this more formal address with a quotation from that paper and to elaborate and bring up to date its main educational suggestions. The quotation is as follows:

> "The administration of the training school has become one of the most vital subjects connected with hospital management. It is a timely topic because its present operation is as uncertain as its future is conjectural. Pupil nurses are the only known professional students whose training constitutes productive labor. Other students work during their training, but the result of their efforts is only to gain information and to improve their minds, but undergraduate nurses are of a distinct service to hospitals while gaining experience and acquiring knowledge. Because of this economic fact, training schools were built up by giving student nurses a small salary, tuition, lectures by the staff, laboratory studies and medical care, in addition to free board and lodging. Until a few years ago it was considered satisfactory to graduate nurses under this general plan, but since the standards of medical education were raised there followed a natural and parallel program on the part of the nurses to likewise raise their entrance requirements, prolong their courses, train special teachers, increase the faculties, add more subjects to the courses, and standardize the schools."

Here we have two parallel plans, both highly desirable, the one to better train the medical student, the other to greatly advance the curriculum of the student nurse. But the plan for the medical student contemplated a division of the increased cost between the student and the school in which he studied; while in the case of the nurse the entire cost was to be borne by the hospital which maintained her particular school.

Just a few years ago when a nurse came to a training school, she had something to barter —her labor for her education. The hours of teaching were few and the subjects simple so she had ample time to give to the hospital in return for her didactic and practical training. But all this has changed! Her first year now is so crowded with didactic work that she has little time left for floor duty; in short, she is getting more in education than she can pay for with her work.

Now, let us take counsel and see how these changed conditions affect the training schools of the different kinds of hospitals and what plans can be devised which will neither hamper the nurse in her training nor drive the larger, better equipped hospital to abandon the much needed training school for some simpler and more economic plan of caring for the sick.

The paper read at Gastonia, North Carolina, in 1929, described a plan which contemplated sending prospective nurses to central schools for a period of study in anatomy, chemistry, materia medica, bacteriology, pathology, ethics and practical nursing procedures. The nurses thus would be more valuable when distributed to the hospitals for duty. From the viewpoint of hospital management, this plan appeared economically sound, provided the students and not the hospitals paid the expense for board, books, and tuition.

The Medical College of Virginia has, since the fall of 1927, given this type of instruction to the nurses of some of the hospitals in Richmond. Since the cost of maintenance has to be borne by the hospitals and since so much time is lost by the nurses travelling to and from the college, the arrangement has not received the support of all of the institutions of the city. The result of this far-sighted experiment, however, has proven the educational soundness of the project.

Such plans intended to cover small as well as large hospitals were considered bold in 1929. After a lapse of four years and a financial world upheaval they now appear in 1933 to be rather tame if not actually timid. They call to mind the words[2] of Dr. W. Lowndes Peple written in retrospect after the World War: "What a leveler is Time?"

### The Small Training School

Let us consider first the small training school. From the reports that have come to us from the small hospitals which have discontinued their training schools we are forced to conclude that they all consider the change a wise one.[3] It seems certain today that the use of graduate nurses and nursing assistants

2. "J'Accuse La Guerre," by W. Lowndes Peple, **Southern Medicine and Surgery**, Vol. 88, March, 1926.

3. In a personal letter from the Secretary of the Virginia Board of Examiners of Nurses she reports, "Sixteen of our hospitals have voluntarily closed the school of nursing while continuing the hospital."

is more economical for these hospitals than the operation of a school. Further, the relief from the worries of arranging classes, keeping records and teaching gives the doctors more time for professional work, study and recreation. Statements from these hospitals also indicate that the patients are cared for as well, if not better, than by student nurses. Graduate nurses who were taken in training with the impression that employment would be available upon graduation are again seeing this hope realized.

Some of our smaller hospitals seem slow to take advantage of the opportunity of being relieved of the pedagogic responsibilities and financial strain of maintaining training schools. As time goes on, however, more of them are seeing the advantage of changing to the use of graduate nurses with the assistance of some one of the many types of attendants.

*Registered Attendants:* Those who look fairly towards the interests of all concerned see great danger in training too many registered attendants. If their number ever becomes large and they enter seriously into competition with the graduate nurses for private duty, the order of history will be reversed and the little mouse will devour the lion. Hospital executives and doctors should, therefore, discourage the wholesale graduation or certification of nursing attendants for many reasons, particularly because doctors know that attendants cannot be intrusted to carry out highly technical orders now executed by graduate nurses. Furthermore, the use of attendants to do the work of registered graduate nurses is not consistent with the standards of the American College of Surgeons.

*Subalterns (The Galax, Virginia, Plan):* Many communities, however, can well maintain and receive great benefit from a small hospital but cannot support a large one. They may want to meet "the standards," or operate with graduate nurses exclusively, as earnestly as larger institutions, but simply because they cannot do these things it does not follow that they should close. This problem of assistants to graduate nurses for this type of hospital seems to have been solved by the hospital at Galax, Virginia. Girls in small towns, who do not marry, have several opportunities for choosing a life's work. They may enter a bank, office, store, factory or mill. Some years ago hospital authorities in Galax began the practice of employing local girls for continuous duty in the institution under the supervision of graduate nurses. The girls hold permanent positions just as laboratory technicians do in hospitals or as their friends do in the various businesses or plants of the town. The hospital has far more applications than vacancies. They select the applicants who will enjoy this type of work and are competent in it. Those who show an unusual preference or aptitude for certain departments of the hospital, as floor duty, or the dietary department, are trained for these particular duties and are not constantly changed from one department to another. They are always under the supervision of graduate nurses but have no routine classes, graduations or registrations. Many of them have worked in the hospital for eight years and are well contented with their jobs.

The nursing problems in small hospitals, therefore, seem simple now as compared to 1929.

## The Larger Training Schools

The larger training schools, and by this we mean schools connected with hospitals of fifty beds and over, have better facilities for teaching because of a greater daily average of patients and by virtue of their larger teaching staffs. Since the balance in the law of supply and demand for adequately equipped graduate nurses must be maintained, for the present this type of hospital has a real responsibility and duty before it to carry on, and to see that this supply equals the demand and no more than the demand.

There are just two ways in which it can be done. Either put the cost on the student nurse, charging her tuition instead of paying her a salary, or let her take her first year with as much of her didactic work as possible at a central school, preferably one connected with one of our already established colleges.

The first of these two plans, as one can readily see, is uneconomic from the standpoint of the hospitals. It multiplies teachers, classrooms and laboratories and still is not ideal. The other plan would bring better trained women to the hospital, ready for practical work, with not too much of their time given up to didactic work to prevent them from earning their way by their work until graduation. To express it another way the students would pay board and tuition for the central school

course, but would "work their way through" the actual hospital training.

The advantage of this plan to the pupil nurse is that she would pursue her studies under qualified and trained teachers without the interruption or diversion of hospital duties. The advantages to the hospital are that it would be relieved of the cost of maintaining the nurse during the period of her theoretical studies; that it would be relieved of the expense and responsibility of providing didactic teachers; and finally, and most important of all to both the nurse and the hospital, the full time of the nurse would be devoted to practical training uninterrupted by classroom duty.

This new arrangement would involve a double matriculation. Each hospital would continue to select nurses for its school from its own list of applicants; classes so selected would be referred to the central school to complete their basic training. The central school would exercise the right to reject students not meeting the recognized requirements of a nurse and also of dropping students not advancing satisfactorily in their studies.

Upon completing this basic training the students would then be distributed to their respective hospitals to finish their training as required by the State Board of Nursing Examiners.

### Conclusions

1. It is suggested that the best interests of small hospitals will be served through the discontinuance of their training schools.

2. Sixteen small hospitals in Virginia have found it to their advantage to voluntarily give up their training schools and to operate with a nursing staff consisting of graduate nurses and attendants.

3. The education of registered nursing attendants is at present a "No Man's Land," full of difficulties and dangers.

4. If a sufficient number of registered attendants are not now available, small hospitals may well consider the permanent employment of local women as nursing aids or helpers, as is done under the plan described as in operation at Galax, Virginia.

5. The closing of the smaller training schools will help relieve unemployment among graduate nurses and also improve their distribution.

6. Hospitals of fifty beds or more will doubtless find it advantageous to continue their training schools provided they can be relieved of both the expense and responsibility of theoretical instruction and the interruption of practical work by classroom duties.

7. This can be accomplished by arranging for the completion of pre-clinical training before nurses enter the hospitals.

8. Courses for this pre-clinical training should become part of the curriculum of institutions for the higher education of women, though obviously they should come largely through the leadership of those holding official positions in the nursing profession and the authorities of medical colleges.

9. These plans are renewed with the hope that they may prove to be a workable economic and pedagogic basis for improving "problems in the education of nurses in Virginia."

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## HEART PAIN.*

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Heart pain is a broad term covering not only certain organic and functional disturbances of the heart and aorta, but also disturbances of other organs which may give pain referred to the cardiac area.

Under the general classification, probably the most common are the following five conditions:

1. Abdominal gaseous distention is probably the most common, as well as least serious, of all forms of heart pain. It is not uncommon to see a patient who complains of pain and a sense of fullness over the heart following a heavy meal, often worse after retiring and when in certain postures. It is well in these cases to bear in mind the possibility of gall-bladder disease and dyspepsia.

2. Probably the second most common diagnosis of heart pain is neurasthenia. It will be noted by the older men here, however, that they make fewer diagnoses of neurasthenia each year, and their cases suffering with this complaint frequently are, as time goes on, reclassified as some other condition. Personally, I am convinced that if we leave neurasthenia out of our nomenclature in heart disease, we will make a larger number of correct diagnoses.

3. The next disease in order of frequency is coronary sclerosis, with or without exten-

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sive myocardial degeneration. The pain associated with coronary sclerosis is dependent upon the degree of ischemia produced. Porter and Bigger, in a recent paper, report an excellent illustration of this. Two of their patients had received stab wounds of the heart. In one case, a branch of the coronary artery was severed; in the other, the muscle fibres were cut. Both of these cases were sutured under local anesthesia and neither suffered any pain either at operation or afterward. It was decided that this was due to the fact that the sutures caused a complete, rather than partial, ischemia of the muscle. In coronary sclerosis the electrocardiogram may show bundle branch block, right or left axial deviation, fibrillation, flutter, or complete heart block, depending on the location and extent of the lesion. However, the electrocardiogram is simply one link in the diagnostic chain, and is not to be considered independently of the other findings. We must also consider the onset, means of relief, recurrences and duration of pain.

4. The fourth condition is aortitis, with or without aneurism. This is to be treated symptomatically, with the cautious use of antisyphilitics, if the conditions indicate it.

5. The fifth and last condition we shall consider is angina pectoris. This is perhaps one of the most impressive as well as ominous of heart conditions a doctor may be called upon to treat. It is generally a disease of those "entangled in the toils of progress," as White has aptly said. It is probably impossible to give a definition of angina pectoris which would meet with the approval of all present. In my classification, I am limiting it to those cases of acute intense gripping pain either over the heart or radiating to other portions of the body, usually in the elderly or middle aged, relieved by nitrites.

In this condition, the electrocardiogram may, or may not, be of help. The underlying condition is functional. Reed has recently advanced a theory which now seems to have been pretty generally accepted, viz.: that it is due to a spasm of the blood vessels leading from the heart, with contraction. Thus, once the lumen of these vessels is lessened, the intercardiac blood pressure is raised; and, may I add, that this naturally reduces the supply of blood in the coronary arteries, causing a temporary ischemia.

While heart disease in persons under 45 is decreasing, above that age it is definitely on the increase. This is illustrated by the following tables:

TABLE I

Percentage *Annual* Increase (plus) or Decrease (minus) in the Death-rate from Heart Diseases (pericarditis, acute endocarditis and myocarditis, angina pectoris, "other diseases of the heart"). Metropolitan Life Insurance Company, Industrial Department, 1911 to 1929.

| *Age Period* | *White Males* | *White Females* |
|---|---|---|
| 20 to 24 | Minus 1.2 | Minus 1.9 |
| 25 to 34 | Minus 2.5 | Minus 2 5 |
| 35 to 44 | Minus 1.3 | Minus 1.9 |
| 45 to 54 | Plus 0.6 | Minus 0.5 |
| 55 to 64 | Plus 1.4 | Plus 0.1 |
| 65 to 74 | Plus 1.1 | Plus 0.7 |

TABLE II

Standardized Death-rates for Angina Pectoris, Metropolitan Life Insurance Company, Industrial Weekly Premium Paying Business
Total Persons—Ages 1 to 74 Years

| *Year* | *Death-rates per 100,000* |
|---|---|
| 1932* | 11.5 |
| 1931 | 11 5 |
| 1930 | 11 1 |
| 1929 | 11.3 |
| 1928 | 11.4 |
| 1927 | 10.7 |
| 1926 | 10 3 |

*Provisional.

TABLE III

Deaths from Heart Disease in Virginia

| | 1931 | 1930 | 1929 | 1928 | 1927 |
|---|---|---|---|---|---|
| Heart Disease (inc. angina pectoris) | 4,801 | 4,734 | 4,739 | 4,766 | 4,333 |

The lowering of death-rate during the earlier decades is probably, as pointed out by Dublin, because of the favorable effect of public health measures in checking the infections which damage the heart and allied structures. It appears that there is a growing proportion of the population with hearts unimpaired by the sequelae of scarlet fever, diphtheria, typhoid fever, syphilis and the streptococcus. Much of the heart disease after the age of 45 is due to the hypertensive and arteriosclerotic type. This may be the result of the stress and strain of modern life.

Much confusion in evaluating mortality statistics has resulted from our nomenclature of causes of death. It is just as confusing to lump all deaths from heart disease in the broad statement that heart disease is on the increase, as it would be to classify all cases of lung disease as a single entity, including tuberculosis, pneumonia, cancer, embolism and the rest.

*Treatment.*—There is very little new in the treatment of any of these diseases, except angina pectoris. In this condition a great deal

has been accomplished by means of the xanthine diuretics; of these, probably the most popular are theo-bromine, euphyllin, metaphyllin and theocalcin. These drugs have a tendency to dilate the cardiac blood vessels and to relieve the vascular spasm.

The opiates should be used freely; frequently such drugs as digitalis and such dieuretics as novasural and salyrgen and urea are helpful in cardiac failure with edema, and, last, but not least, is rest with relaxation.

In conclusion, may I say that I have learned by experience, as well as precept, to consider thoughtfully and searchingly any complaint a patient makes to me about precordial pain.

*Medical Arts Building.*

## MYASTHENIA GRAVIS: WITH REPORT OF A CASE.

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Regardless of the rather large number of cases of this entity reported, there is probably no other disease dating back a half century of which less is known regarding etiology or treatment.

The condition, now known generally as Myasthenia Gravis, was first described by Wilkes in 1877, and by Erb in 1878. Both of these clinicians felt that the disease was one of bulbar paralysis alone, unassociated with generalized motor weakness. In their descriptions both emphasized the fact that it was not an atrophic condition and called attention to the absence of anatomic observations. That the disease was not a true paralysis, but more probably an exhaustion of the muscles involved, was shown by Goldflam four years later. This hypothesis was proven conclusively in 1894 by Jolly by electrical experimentation (myasthenic reaction of Jolly). He also called attention to the fact that not only the bulbar musculature were involved in the disease process, but that the other muscles of the body were involved as well. Campbell[1] and Bromwell in 1900 expressed the belief that muscular atrophies were a portion of the clinical picture, but this view was not generally accepted. The first histological contribution to the subject was that of Wright in 1901—who described lymphatic infiltration in the muscles. Buzzard confirmed this finding, and expressed the opinion that these cellular exudates were found not only in the muscles but also in other body tissues. Merkeloff[2] in 1912 reported that the abnormal muscular fatigue was not confined to striated muscles, but that smooth and cardiac muscle were also affected in the disease. This observation was apparently strengthened by Foxe[3] in 1920 who reported a case with marked dyspnea and palpitation with visceral and vesical atony. Querido[4] in 1929 states that the perivascular cells found in the condition are not lymphocytes but the pathological process is more probably a perivasculitis, found not only in the muscles but in the parenchymatous organs. According to Keschner[5] and Strauss there have been more than 300 cases reported in the literature. Most of these have been reported in continental journals.

Etiology: In spite of the rather large number of cases reported, the etiology of myasthenia gravis is distinctly uncertain and largely theoretical. It may occur at any age, but is usually seen between the ages of 20 to 30 years. Females are more often affected than males. Various toxemias and infections are said to be exciting or predisposing causes. Cases have been reported after influenza, typhoid and diphtheria. Campbell reported one case following scarlet fever. Taylor reports a case following lead colic. Goldflam[6] and Tilney[7] reported several cases following or during pregnancy. That the disease may occur after any type of toxic or infectious condition, and that the severity of preceding condition appears to bear no relationship to the probability of developing myasthenia gravis, may indicate, as some authors have mentioned, that individuals have a congenital predisposition to the disease. That most of the cases occur early in life would also tend to indicate this premise.

In recent years the study of endocrine function has been dominant in medicine and many efforts have been made to associate myasthenia gravis and endocrine dysfunction. The presence of an enlarged thymus in about half of the cases would strengthen the assumption. Some neurologists have felt that the enlarged thymus was the basic cause of myasthenia gravis, and have instigated their treatment towards this source, with not uniform, but occasional good results. As remissions under any form of treatment are common—no conclusion can be drawn. It would seem more likely that the enlarged thymus is a result of myasthenia gravis, rather than the cause. If we assume that the entire function of the endocrine system has been impaired by an acute or chronic toxemia or infection—thus in turn impairing

general body metabolism—is it not possible that the accessory infantile gland long dormant should be called upon, with resulting hypertrophy, to aid the injured endocrine system in the performance of its function of metabolism? If this did occur the enlargement of the thymus would be a natural consequence and it is a significant fact that few of the thymus glands in myasthenia gravis examined histologically have shown other than enlargement or simple hyperplasia. The fact that all cases of myasthenia gravis have no enlargement of the thymus could be explained by the assumption that the gland had entirely atrophied before the onset of the disease, thus no function could occur. Whether this enlarged thymus is actually secreting a beneficial hormone is questionable although a case was reported well, after eight years on thymus and strychnine injections (Keschner and Strauss)[5]. Certainly the presence of an enlarged thymus in so large a number of cases of myasthenia gravis would indicate that the disease involves the endocrine system either directly or secondarily.

There has been a considerable amount of work done in regard to metabolism and the by-products of the metabolism in these cases. While this work has been too conflicting in its various phases to draw any direct conclusions, most reports have shown a diminution in the body secretions of the products of muscular metabolism, principally creatin and creatinine, and in neutral sulphur as compared to its ratio to total sulphur output. These findings have led some observers to believe that the disease process is based on a disordered muscular metabolism, while other observers, among them Curshman,[8] felt these changes in metabolism to be the result of some associated condition, rather than myasthenia gravis itself. In any case no definite conclusions can be drawn, and practically all metabolic studies in the disease show only one persistent fact, a decided lack of uniformity. No significant changes have been observed in basal metabolism, and any effort to link the condition to the endocrine system has been entirely theoretical, just as any direct evidence is lacking, which might link the etiology of the disease to any specific body system. The unproven course of events in myasthenia gravis might be as follows: acute or chronic toxemia or infection with related damage to the endocrine system, with resultant impairment of function of the more delicate portions of the system. As a result, an increased burden is placed on the undamaged portion of the endocrine system as evidenced by hypertrophy of the long dormant embryonic structure, the thymus. As a result of this diminished function, the entire body metabolism is impaired, but to a degree which is felt in only those structures where metabolism is almost constantly occurring in a much greater extent than other portions of the body, the skeletal musculature. Consequent to this disordered metablism, toxic products of metabolism accumulate in the muscle cells with resulting fatigability and exhaustion when exercised. That the more delicate bulbar muscles are usually the first affected, with gradual involvement of the extremities, would tend to strengthen this assumption. That this etiological cycle cannot be proven in the light of our present knowledge is true, added weight against such an hypothesis being that treatment by various grandular extracts does not alleviate the condition; but there may be, of course, internal secretions as yet unisolated or destroyed in preparation of the gland substance for therapy which would account for our failure to get results in their administration. In all likelihood the cause of the disease is much more complex than that outlined above, but in any event it places the condition on a basis which, while not clear histologically or pathologically, might work as a clinical synopsis.

Treatment: Myasthenia gravis, a disease of remissions, while of course a comparative rarity, is much like multiple sclerosis in the various claims made for the therapeutic agents used in its treatment. Good results have been claimed from all types of preparations and therapies. Strychnine in large doses has been most widely used, also calcium, dietary measures, and glandular preparations. Irradiation of the thymus is recommended by some, discouraged by others. Briefly the treatment might be stated as—rest, plus any therapy desired that can in no wise interfere with the former.

Prognosis: Reports vary, but must be considered generally unfavorable. Oppenheim reported twenty-six out of thirty-eight cases that died under observation. M. Allen Starr found that 45 per cent of the cases collected by him died in six months. Cases sometimes terminate very rapidly, McCarthy recording one that lasted only fourteen days. Some cases last for years and, according to Wechsler, mild

cases sometimes recover completely. McKendree[9] has had a case under observation for twenty years.

The following case may be of interest, because of its rather slow course, and the fact that it followed closely on a moderately severe case of scarlet fever:

Patient is a female, aged 24, married, a stenographer. Referred by Dr. H. B. Stone, on May 12, 1932.

Her complaints at this time were drooping of the eyelids, especially in afternoon and evening; general muscular weakness; occasional difficulty in swallowing or talking.

*Onset:* Onset of condition was two years previously, the initial symptom being ptosis of the eyelids. This ptosis sometimes involves one eye, sometimes the other. At times both are equally involved. Approximately six months after appearance of the ptosis, diplopia developed and has been present at variable intervals since, in spite of correction. About one year ago, generalized muscular weakness was noted after strenuous exercise and especially marked in the muscles exercised. After taking a moderate walk she would be unable to climb the stairs. After a long meal her jaws would be very tired. Swallowing at times was difficult, but no regurgitation has occurred. All symptoms mentioned have shown remissions, but at no time since onset has she been entirely symptom-free. The ptosis has been the most constant finding. No headache or pain has been present at any time and patient feels well generally. No gastro-intestinal or cardiac symptoms have been noted. Patient has not been pregnant. No menstrual disorders.

Past history discloses that she suffered a moderately severe attack of scarlet fever just previous to her present illness and it was while convalescing from this condition that her first symptom was noticed. Past and family history otherwise irrelevant.

*Neurological Examination:* Well developed young woman with bilateral ptosis, more marked on left than right, but definite on both sides. She held her head back at an angle in order to overcome the ptosis. Has ironed out facial appearance (myasthenic facies), resulting from facial diplegia and ptosis. Double vision is present. Gait and station were normal. Deep reflexes were initially active, but rapidly became sluggish and entirely disappeared on repeated tapping. They would return after a rest period. In counting rapidly up to fifty the voice would become weaker and after reaching forty she had difficulty in continuing above a whisper. Sensation was normal to all forms. Examination of eyes by Dr. Stone disclosed a sixth nerve weakness and ptosis. No fundi or field changes. Remainder of the cranial nerves were normal with exception of the bilateral facial weakness. No muscular atrophies or fibrillations. No Babinski or abnormal reflexes. No psychogenic symptoms. Laboratory tests including serology were entirely normal.

Patient was told to discontinue work. Periods of rest were emphasized and large doses of strychnine prescribed. She did not stop work entirely, but has followed the latter measures. In conversation recently she states that the ptosis is still present, but generally she feels that there has been some improvement in her general strength.

SUMMARY

A brief review of the literature on the subject of myasthenia gravis is given, with discussion of the etiology.

A case is reported following scarlet fever.

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## PSYCHOGENIC FACTORS IN DISEASE.

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There is a mental factor in every disease which cannot be ignored by any physician whether he occupies the position of an expert in one of the so-called medical or surgical

specialties or treads the way of the general practitioner. This idea is somewhat new and vague. The recognition, understanding, and management of mental reaction associated with organic illness and as a mechanism of producing somatic responses simulating disease is at present just beginning to be asserted by the physician in general, and now needs much more crystallization to be of practical dependable value to that large majority group of patients seen by the general practitioner and internist. As this new psychologic interest of the modern practitioner has only in the past decade attracted their attention, it is only natural that it is usually superficial and not based on systematically acquired knowledge.

That this important phase of the mental elements in medical practice should be neglected is not surprising when we consider the intensive training that the student of medicine receives in anatomy, physiology, and structural pathology, first in his under-graduate studies and later in his post-graduate pursuits in various institutions. Such intensive training during the formulative period of preparation has served to crowd out corollary studies of the mental and functional disease reactions and associated psychological responses associated with structural change.

There appears to be at least an unfair balance in the study of anatomical and mental factors in disease, and the application of such studies to the sick patient. This seems unfair if we believe as one writer that "mind is man's proudest and most valued possession, and happiness, which is a mental state, his most sought after goal," and that "the body may truly be thought of as a group of instrumentalities for carrying into effect the dictates of the mind."[1]

Consideration of the patient only from the standpoint of the structurally affected organ or system of organs is an error, or probably more correct, yet milder, incomplete functioning on the part of the physician; consideration of the psyche, leaving untouched the physical change in the sick, is similarly incomplete functioning. That such a condition should prevail need not be viewed as illogical nor yet necessarily with concern. It is therefore a natural sequence to our anatomical teaching and training, as well as the confused, contradictory, and at times one might say incomprehensible and unappetizing presentation of the story of the psyche and its relation to physical being. This last statement is in no sense to be considered as condemnatory to the field of any school of therapeutic psychiatry but rather to be interpreted in the light of the separatist attitude of mind, wherein there is an apparent dissociation of physical and mental symptomatology without a clear unity.

The doctrine of the organism-as-a-whole, which has been variously expressed, appeals to the practicing physician as being the most applicable and understandable dictum and, when used as a basis of diagnosis in the sick individual it seems, at least in the milder forms of disturbed psyche, associated or not with organic pathology, expressing symptomatology on a visceral level, to reap a slightly richer understanding of the problem confronted. It is with this doctrine in mind, namely, an understanding of the patient and his problems both on the physical and mental level, that this presentation chiefly considers, and takes as a theme idea that so well expressed by Ritter[2] in his formula, "the organism in its totality is as essential to an explanation of its elements as its elements are to an explanation of the 'organism'—the unity of the organism."

I shall attempt to express by exemplary discussion the following points: First, that there does seem to be an apparent mental reaction associated with all diseases; second, in functional diseases simulating organic disturbances, one must search for and know something of the psychic basis in any given symptom-group expressing itself on a somatic level to fully evaluate that disease and manage the patient, eventuating in health and happiness, or equilibrium with environment: and, third, in the presence of an indisputably recognized functional or mental disease, one will do well by beginning with an understanding of the physical background, which in itself has a twofold purpose which I shall discuss in detail later.

This subject is difficult for the average practitioner, and though he wanders somewhat in the dark through a maze of intricate material, I rather feel that it might be expressed in more recognizable and appreciative language. While in this discussion any relation to the true psychoses is avoided, and only momentary inference is given to dream states, symbolism, and major sex conflict, about which an army of workers are waging a war of clarification, it is not to be interpreted in any sense as an attempt at disparagement or unbelief in the approach or study of these stupendous mat-

ters. While I am aware that there are still many deaf ears to an acknowledgement of mental factors as the etiology of symptoms, they may only be so either because those who preach the story have with cumbersome and assumptive verbiage swathed and glorified this doctrine, or because the teachers and students of newer theories have desired to make the fate of man born of woman doomed to everlasting sex damnation.

For an immediate realization that there does seem to be an apparent mental reaction associated with all diseases, one has only to recite a few of those classical examples, so often quoted: the hypo-chondriacal reaction of the chronic dyspeptic, the apparent cheerfulness of the active tuberculous individual, the extrovert dynamic reaction of the plethoric hypertensive case, the explosive emotional and tense response of the hyperthyroid, the dull slow apathetic psyche of the myxedema case, and the depressed dull listless reaction associated with febrile disease, descriptively called the typhoid state. Most of you can recall similar cases as the following: some years ago there was under our direction a relatively young woman of thirty-five who had carcinoma of the cervix. The picture rapidly evolved in the course of approximately two years into carcinoma of other pelvic organs, peritoneum and lungs. The patient had full knowledge of her condition, and yet maintained until death a superb stoicism. Yet another more recent seriously ill individual exemplifies a rather philosophical trend of the psyche. Clinical records show a man, age sixty, who has had diabetes several years and mild hypertension, who developed, six or eight months ago, coronary thrombosis and recently a severe cardiac decompensation. We have had some difficulty in keeping him at rest, and his reply to advised continued bed rest is something as follows: "I had a friend who had the same disease as myself. His doctor advised bed rest for one year, at the end of which time he died. I think I would rather get up now."

Compare these calm mental reactions associated with severe physical disturbances with that of an anxiety neurosis where a fear of death is expressed with volubility in such familiar expressions as one of my patients used, "Oh doctor, I was afraid I was going to die, and I know I would have done so had not my wife given me some ammonia." The patient with a functional disease wears himself out as well as the physician in consultation, but contrast this with a woman who called me during the month of July for an examination of a small lump in her breast. I was out of town. She was brought in by her husband the following February and at this time the mass was the size of a fist, and she still desires to go back home to consider the advice given her.

For a better recognition of the functional disturbances, and an evaluation of its presenting signs, let me for a moment review a sequence of circumstances which might eventuate in a clearer concept of the psychological level of disease. In the application of the principles of the practice of clinical medicine and its various branches, we are accustomed to begin with the history of an illness obtained from the patient, and one remembers that our diagnostic impression of disease is partly obtained by such a mode of procedure, and not infrequently the thought has been expressed that this of all measures still remains the most important, despite the vast increase in the number and improvement of diagnostic aids. One must be mindful, next, that such data thus secured is an expression of feeling and that that feeling has undoubtedly certain determinators. This feeling is not infrequently distorted by interpretation, which, in turn, is governed by a varying group of circumstances such as phylogenetic determinators, general mentality, emotional tone, and numerous environmental influences. Therefore, the end result as elicited in the form of the history comes to us by a circuitous but somewhat predetermined path about which the physician should be cognizant to adequately apply his art of healing. Again, even in the cooperative and submitting patient, the story told might be clouded in an instinctive desire to put the best foot forward and present one's self in as good a light as possible, clothing the intimate with a presentable make-up.

The patient frequently complains of innumerable, uncomfortable, vague sensations, anxieties, fears, and not a few express a self-made diagnosis. The patient may rather than recite symptoms, interpret them, which is particularly true in the functional disease. The anxiety is frequently not so much of the symptoms but of its interpretation, their origin and mechanism of production rather than relief—an apparent introversion reaction. The occurrence of somatic complaint of psychic

origin must be readily recognized in both organic and functional disease.

It has seemed to me that those of us engaged in the practice of internal medicine are seeing more and more of the functional disturbances, the neuroses, and the milder psycho-neuroses. When one has been trained more or less in searching for physical changes, and those associated pathological disturbances in secretions and excretions, it taxes the ingenuity of one so trained to appreciate presenting psychic manifestations. Probably, after all, the most that can be expected of us is the recognition of mental disease, and quickly seek the services of those expert in the field. Still, it is felt that even here some selection might be justifiable. I somehow feel that the physician must search for and know the psychic reaction in any given condition to fully evaluate and manage the patient, eventuating in health and happiness, causing his charge to live and live abundantly. In this present undertaking of mine it might be somewhat of a wish fulfillment to be able to understand such situations, but, on the other hand, it undoubtedly broadens our conception of disease in becoming aware of this very difficult aspect. Many of this group of patients as I have suggested either interpret their own symptoms or desire an interpretation of them, and, possibly, if the physician, after a study, can rationalize the situation for them in an acceptable manner, many will do well and probably, as one prominent psychiatrist has suggested, do even better than falling in the hands of the expert. Although the average practitioner might be untrained, these "infected minds" discharging their secrets to "deaf pillows" can far more effectively discharge them to these understanding and kindly counselors. I believe the psycho-analyist admits that even after a talking cure the individual may have a relapse. Not a few patients may resent the advances of the expert, forsake him, and come to rely on the average practicing physician whom, they at least feel, has a wider contact with all disease, and thereby might have a more sympathetic attitude. Might it not after all hold some truth to say that any method employed in the management of psychic disturbance in bringing about health resolves itself into personal influence? By bringing to light conflict, repressed desires and suppressed frustrations through psychoanalytic methods, might there not result little help to the patient, and, by encouraging introspection, do harm instead of good? At times it seems so futile to the patient to employ such methods, especially where physical trauma to him appears to explain all difficulties. Such a situation is suggested in the following case:

*Case 1.*—Male, white, age 36. Chief complaint: pain in the right foot with limp. Injured his right foot in May, 1929, necessitating absence from work for a period of two weeks. A diagnosis of sprain was made by the surgeon. At this time X-ray examination was negative for fracture. In September, 1929, because of continued pain in the foot he had another X-ray examination which showed evidence of an old healed fracture but normal in alignment. He was treated by an orthopedic surgeon for eleven months without improvement. In 1930 he twisted the ankle of the same foot again. Repeated X-ray examinations of the foot since have not revealed any organic etiological factor of pain. Complete physical examination of the entire body normal. Psychic factors obtained in the history are as follows: In 1928 mother was injured by an automobile and died ten hours later. Twenty-five days later the patient struck and killed a young woman pedestrian while driving his automobile, and since that time has given up driving his automobile. Schooling to seventh grade. Father a very strict man. Patient has been left seventy-five thousand dollars but lives in a squalid manner. On beginning the type of work in which he is now employed he had considerable ambition for progress, but could not pass the examinations which were required. Sex life apparently normal. A summary of an examination made by a competent psychiatrist was as follows: "The patient is apparently an individual with a none too great original endowment who is somewhat poorly integrated, but the information at hand as regards family, personal history and social adjustment are extremely meagre. In the face of absent physical findings, absent X-ray and laboratory findings, it would appear that this man had developed a psychoneurotic condition with conversion symptoms and fixations at the somatic level, following what appears to be a rather minor injury."

Here a traumatic situation was sufficient and acceptable to the patient as a causative agent of his complaints. This expression at a somatic level of a psychological reaction confused at least one orthopedic surgeon for eleven months,

and another today still maintains that there is present a flat foot and some stiffness on motion. One might interpret this conversion and fixation in several ways: First, a thwarted drive for social approval, thwarted through lack of education (insufficient establishment of ego) and acutely precipitated by accident, subsconsciously laying the blame at the door of a physical injury; second, as a punishment to the foot for failure to use the brakes and prevent the killing of a human—an expression of guilt; or third, a partial death of the part, a cutting off of the foot, castration symbolism. A diagnosis of traumatic hysteria might be made, but call it what you will and interpret it as you may, the main point I desire to express by this example is that of the recognition of a psychic background or, at least, of a psychic association with an apparently simple surgical disease.

It is not uncommon at times for the patient to be examined physically with extreme care, together with the use of many elaborate laboratory tests, going from one competent physician to another, and like the Persian of old, he "came out the same door wherein he went." having been told by all that there was nothing wrong with him, but "nervousness." or "neurasthenia." This, as far as it goes, may be true, but the patient remains sick. A full understanding and proper explanation of his illness to him that might be rationalized by him, and therefore acceptable, will probably better accomplish a cure than by leaving the patient on a bending limb of "neurasthenia."

*Case 2.*—Recently a woman, age 37, was referred to me by a suspicious surgeon. Fragments from the history are as follows: Chief complaint was indigestion. Mother died of tuberculosis. One sister in state asylum and one brother has ulcer of the stomach. One miscarriage. La grippe frequently. Married fifteen years; no children. Trouble with "bronchial tubes" for ten years. In 1926 had cystitis. Later, in 1926, a "nervous breakdown," at which time she was in bed for six weeks. In the past five years has consulted two outstanding physicians. In the summer of 1932 a chronic appendix was removed. Present symptoms are gas, belching, bloating and fullness after meals, tiredness, constipation, cold hands and cold feet, and loss of weight. These symptoms were present before and after removal of the appendix. Physical examination normal; gastro-intestinal X-ray series normal other than ptosed stomach and spastic colon; feces, urine, gastric contents, and blood normal. Affective influences present: (1) Depressed over sister's mental illness, (2) pay cut, (3) helping husband's people financially, (4) housing and helping a married niece—soon to be confined—whose husband had left her, and (5) best friend recently died of cancer. A diagnostic impression was applied of an affective disorder with a recurrent depressive state in a patient of a cyclothymic constitution, or, one might say a little plainer, a patient with a low grade mental and physical start, affected by environment, producing symptoms on a visceral level.

Therapeusis of such a case instituted on a purely structural pathological basis should only result in the patient further wandering from doctor to doctor without relief, but with an appreciative understanding of the mechanism of production of the chain of presenting symptoms, and a clear, acceptable, hope restoring explanation to the patient, not infrequently a reversible process may take place and the individual restored to health sufficient to cope with new vicissitudes of life. Barker[3] has called attention to such conditions and suggested that the recognition of these affective disorders and their assignment to their proper nosological positions are of importance for prognosis and for adequate care and treatment. I feel that any correct explanation of such affective disorders must of necessity, to do good, be in terms that are understandable, and not all such cases operate on a deep unconscious level, necessitating true psychoanalytic procedure. Might it not be confusing to the average work-a-day patient to discuss his case in terms of conflict between his *id* and *ego*, resulting in a relegation to a world of repressed desires, frequently allowed expression in dream, or given a visceral outlet, as it would to describe in pathological nomenclature the change that takes place in the disease pneumonia?

Fear and anxious expectancy erupting on a visceral level not infrequently drives the patient to consult the practitioner or surgeon, and unless some sound thought or neuropsychiatric experience forestalls, improper management will result, or needless operation be performed. Such a situation is illustrated by the following:

*Case 3.*—A male white, age 38, was seen on two occasions complaining of agonizing dis-

comfort in the pit of the stomach, sweating, a feeling of nervousness, palpitation of the heart, and twitchings of the legs. It is stated that the feeling is one as if a blow had been struck in the solar plexus. Attacks at times are momentary but at other times last much longer. The presenting clinical picture might suggest an attack of gall-stone colic. The patient was a fair, obese individual, pulse 96, B. P. 150/95, coated tongue, with remainder of physical examination normal. A summary of additional factors obtained were: Illegitimate birth, early days of youth at home unhappy, "kidded" by boys at school about birth, high-school education to second grade. His early work consisted of being a milk wagon driver, street car motorman, fireman on railroad, followed by enlistment in U. S. Army during the World War. When in the army he had a misunderstanding in his name and because of this failed on three occasions to receive his usual monthly pay, but was discharged from the army with a new but definitely fixed name. He is slow thinking, lacks social contact, social life markedly circumscribed, home life even, and sex life normal. The attacks described always come while under an emotional strain. On many occasions they followed a trip to the ball park to see a wrestling match or while listening on the radio to prize fights.

Whether one interprets this case psychologically to mean a fear of moral fall because of lack of identity, surely, it exemplifies a situation which might have been placed in the category of organic disease, namely, gall-bladder pathology, and futile diagnostic and therapeutic measures instituted for its correction were it not for baring the psychogenic factors really responsible for the production of symptoms.

It is not infrequent that one inclined to study the sick from the viewpoint of the entire organism structurally as well as psychologically is impeded by a previously established and well-authenticated diagnosis.

*Case 4.*—Male, white, age 37, married, occupation fireman, was diagnosed some three years ago as having a duodenal ulcer by a competent gastro-enterologist, confirmed apparently clinically and roentgenologically, though he has continued symptoms of indigestion, heart burn, loss of energy, depression, occipital and neck headache, tiredness, "nervous" tension, "congestion" of chest, and soreness at the end of breast bone. Summary of the complete study is given briefly, as follows: Only child of marriage of mother and father; thirteen half brothers and sisters; no respect for father. In his early life lived with uncle for part of the time, and later dependent on half brothers and sisters, which was, to say the least, unpleasant, as "they let him lie on the floor shaking with malaria chills." At the age of fifteen he went to work in a sawmill, then went to Texas oil fields, a flight from his surroundings. In the U. S. Navy from 1917 to 1919. Became after considerable hard work a radio operator in the Naval Aviation Service, having duty for a time in France, although never in the zone of active war operation. After war service, entered the Bureau of Navigation as a civil service employee. After two years, because he thought he was getting tuberculosis, got an outside job selling insurance and subsequently entered the District of Columbia fire department. Married at 27, wife frigid, he sexually inclined, although no apparent conflict existed. Wife's relatives impose on him, and this is the source of frequent domestic quarrel. Gets depressed at times to the point of crying spells. Some difficulty with superior officers. During his ten-year service in the fire department he studied law, graduating from a local school, and passing district bar examinations. He feels himself superior to fellow workers, says he is not one of the bunch and does not want to be. Extremely careful of his finances, somewhat shrewd, and unusually ambitious. Planned on resigning from the fire department on completion of law studies, but economic conditions were not conducive to doing so. Physical examination negative as well as X-ray studies at this time.

In view of the fact that after some years of adequate management for duodenal ulcer with no relief, further interpretation became necessary. Even accepting this diagnosis, one might receive the impression from the multitude of existing psychogenic factors that a primary instinct for social approval, expressed by an ambition urge, has been continuously thwarted by environmental circumstances reflecting itself on a somatic level with symptoms, if not at least increasing and prolonging those originally instituted by the ulcer. This exemplifies a situation where management based on a purely organic basis has led to futile expenditure of money, not to mention time.

A psychogenic factor producing disease or

associated with disease is recognized in nearly all fields and has rapidly become a feature not to be ignored in the clinical practice of medicine. Novak,[4] recently discussing primary dysmenorrhea of the "psychogenic" variety, says, "The physician should never forget that the psychic factor must always be borne in mind, so that a careful history should be obtained, especially as to the time of onset of dysmenorrhea, and a possible correlation of this event with a psychic trauma of one sort or another. As already stated, I do not believe that such an etiology can be demonstrated with the constancy claimed by some authors, but not infrequently it can. Furthermore, whatever the cause of the first attack may be, there is always the possibility that the factor of fear may lead to recurrence and perpetuation of the symptom. This subject is as involved as are many other psychiatric problems, but a good history, interpreted along broad and sane lines, will usually lead to a proper evaluation of the individual case." Johnson,[5] in a careful study of psychic disturbances manifesting themselves in the gynecological patient, expresses his views as follows: "Although it is in no part the duty of the gynecologist to treat these minor and major psychic disturbances, he should be psychiatrically alert, and in the examination of each case should have in mind that the symptoms may arise from a psychiatric background. It is my belief that the gynecologist should explore the heredity, habits, environment, social status and personality of the individual as well as the physiology and pathology, and endeavor at all times to ascertain the cause of the condition producing symptoms. In spite of the increased knowledge of morbid anatomy and skill in surgery, the work of the gynecologist lies open to criticism if the personal factors of his patients are not taken fully into account."

No specialty in the field of clinical medicine can ignore the psychological aspect of the ill man. The surgeon is at least suspicious if not bewildered at the recurrence of pre-operative symptoms following the removal of a chronic appendix; the urologist readily recognizes the psychic factor in nocturnal emission or the rejuvinating effects of a prostatic massage in the physically and mentally tired man of forty, but loses himself in surgical technique in replacing the low kidney of Glenaud's disease; the cardiologist who deals mainly with the end product of organic change resulting from bacterial invasion confronts the psychic factors in cardiac neuroses; while the gastroenterologist probably more than all others deals with the problem in the nervous dyspeptic. Since the war there has come into being almost a new phase of medicine based in a large measure on the recognition of psychic manifestations in individuals, namely, "aviation medicine," which comes under the province of the so-called Flight Surgeon. Reinartz[6] recently calls attention to the fact that the psychological evaluation of the pilot or applicant for flying status is becoming of ever-increasing importance.

The general practitioner and the expert in surgery, as Jastrow[7] expresses it, has too commonly taken an unintelligent and intolerant attitude toward patients in whom no organic disturbance can be found, whose "organ-recital" is listened to with mingled and not well-concealed expressions of pity, contempt, and amused superiority. Physicians are occupied with more tangible and more important and interesting "cases."

May I consider the third point of this discussion briefly, namely, that a primary understanding of the physical background in the presence of an indisputable functional condition is essential. This might seem presumptuous to mention to the average physician in view of the fact that this is the point of attack most generally accepted by them, even though the only one at times. A knowledge of the physical status of the patient still remains for all doctors the starting point in the management of any illness, and must not be overlooked even by the expert in psychiatry. Recently a case under my care illustrated this situation:

*Case 5.*—Female, age 34, presented a chief complaint of cough, tiredness, lack of interest. Married for fifteen years. Has never loved her husband. No children. Has never had sex pleasure. Marital life at present nearly unbearable, and states that if it were not for the fact that her husband has been and still is a sick man she would leave him. Sexual relation has been absent for nine years. She is frigid. Lives in a small apartment and has twin beds. Social life circumscribed. Husband reads the newspaper after dinner and rarely talks to her. She has talked to a number of psychoanalysts who, in general, after attempting to bare her sex life from infancy, end by telling her she has married the wrong

man, and needs a new one. When asked why she does not in this instance follow the doctor's advice, she replies that she is bound by early training and duty to continue this marital relationship. States she feels a little disgusted with questions the experts have asked her, but was fully appreciative of their purpose, adding, "being psyched is not particularly nice." In general her psychic reaction was one of lonesomeness. Physical examination revealed a tuberculous ulceration of the throat, and active pulmonary tuberculosis with cavity formation, not found heretofore. In summary, this case represents primarily a psychological problem, yet, in physical examination, there is found a serious organic disturbance.

The story of mild psychic symptoms produced by or associated with an infected tooth, chronic absorptive infected tonsils, concealed hyperthyroidism, pulmonary tuberculosis, prostatitis, and probably others, disappearing with the correction of these organic conditions, is not an uncommon case record of many physicians. The physical examination made on the purely functional case many times is a part of therapeusis.

A closer relationship of the aspects of personality and physical associations has been studied. It has only been a few years now since paresis with its associated mental responses has terminated in physical background. Mühl has made extensive researches in a variety of tuberculous patients both in and out of hospitals and has established a fundamental personality trend. Lewis from autopsy results discussed in detail the relationship of the chemistry, physical, and psychological aspects of personality and commented in summary that even the lowly corpuscle has its share in the personality make-up.

In the presentation of this subject if I have erred it is because I have gone too far afield and outside of the realm of my own bit of knowledge. The subject probably should resolve itself as far as the average physician is concerned into being sufficiently aware of these conditions to determine when the patient needs a psychiatrist, just as well as when he needs a surgeon, ophthalmologist, orthopedist, or a laryngologist, and in securing such attention without wasteful and harmful delay. However, for such a recognition some conception of the presenting problem becomes quite necessary.

In brief and in summary, etiology, prognosis, and therapeutic accomplishment in disease reach a goal nearer perfection when the sick man who seeks aid is known on all levels. To know this man in all his settings will surely give at least a fuller and more sympathetic appreciation of his presenting problem if not of human behavior in general. A dictum to follow might be, know the man, know the youth, know the child, and, it could even be added, know the fetus—in substance, know the organism as a whole.

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7. Jastrow, Joseph: The House that Freud Built. 1932. New York, Greenberg, 1932.

1720 *Connecticut Avenue.*

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### Reciprocity

There was once a doctor who wanted to buy
Some special particular office supply
He looked through the ads this month's
V. M. M.
But could not find mentioned there, to his
dismay,
The article wanted, in all of the pages.
Said he "That darned Editor don't earn his
wages!
I'll admit it's the first time I've e'er read an ad
But I don't see how that would affect it, by
Gad!"

Now this is the moral of my little tale:
If forsooth you're not anxious to part with
your kale,
Read the ads every month and patronize too
The man who is willing to patronize you.

—*Pennsylvania Medical Journal.*

# Presidents and Places of Meeting of the Medical Society of Virginia

| President | Place of Meeting | Year of Meeting |
|---|---|---|
| *Dr. R. S. Payne, Lynchburg | Richmond | 1870 |
| *Dr. R. S. Payne, Lynchburg | Lynchburg | 1871 |
| *Dr. A. M. Fauntleroy, Staunton | Staunton | 1872 |
| *Dr. Harvey Black, Blacksburg | Norfolk | 1873 |
| *Dr. A. G. Tebault, London Bridge | Abingdon | 1874 |
| *Dr. S. C. Gleaves, Wytheville | Richmond | 1875 |
| *Dr. F. D. Cunningham, Richmond | Charlottesville | 1876 |
| *Dr. J L. Cabell, University | Petersburg | 1877 |
| *Dr. J. H. Claiborne, Petersburg | Richmond | 1878 |
| *Dr. L. S. Joynes, Richmond | Alexandria | 1879 |
| *Dr. Henry Latham, Lynchburg | Danville | 1880 |
| *Dr. Hunter McGuire, Richmond | Old Point Comfort | 1881 |
| *Dr. G. W. Semple, Hampton | Fauquier White Sulphur Springs | 1882 |
| *Dr. W. D. Cooper, Morrisville | Rockbridge Alum Springs | 1883 |
| *Dr. J. E. Chancellor, Charlottesville | Rawley Springs | 1884 |
| *Dr. S. K. Jackson, Norfolk | Alleghany Springs | 1885 |
| *Dr. Rawley W. Martin, Chatham | Fredericksburg | 1886 |
| *Dr. Bedford Brown, Alexandria | Richmond | 1887 |
| *Dr. Benjamin Blackford, Lynchburg | Norfolk | 1888 |
| *Dr. E. W. Row, Orange, C. H. | Roanoke | 1889 |
| *Dr. Oscar Wiley, Salem | Rockbridge Alum Springs | 1890 |
| *Dr. W. W. Parker, Richmond | Lynchburg | 1891 |
| *Dr. H. Grey Latham, Lynchburg | Alleghany Springs | 1892 |
| *Dr. Herbert M. Nash, Norfolk | Charlottesville | 1893 |
| *Dr. Wm. P. McGuire, Winchester | Richmond | 1894 |
| *Dr. Robt. J. Preston, Abingdon | Wytheville | 1895 |
| *Dr. Wm. L. Robinson, Danville | Rockbridge Alum Springs | 1896 |
| *Dr. Geo. Ben Johnston, Richmond | Hot Springs | 1897 |
| *Dr. Lewis E. Harvie, Danville | Virginia Beach | 1898 |
| *Dr. Jacob Michaux, Richmond | Richmond | 1899 |
| *Dr. Hugh T. Nelson, Charlottesville | Charlottesville | 1900 |
| *Dr. J. R. Gildersleeve, Tazewell | Lynchburg | 1901 |
| *Dr. R. S. Martin, Stuart | Newport News | 1902 |
| *Dr. J. N. Upshur, Richmond | Roanoke | 1903 |
| *Dr. Joseph A. Gale, Roanoke | Richmond | 1904 |
| *Dr. Wm. S. Christian, Urbanna | Norfolk | 1905 |
| Dr. Lomax Gwathmey, Norfolk | Charlottesville | 1906 |
| Dr. Paul B. Barringer, Charlottesville | Chase City | 1907 |
| Dr. Wm. F. Drewry, Petersburg | Richmond | 1908 |
| Dr. Stuart McGuire, Richmond | Roanoke | 1909 |
| *Dr. E. T. Brady, Abingdon | Norfolk | 1910 |
| *Dr. O. C. Wright, Jarratt | Richmond | 1911 |
| *Dr. Hugh M. Taylor, Richmond | Norfolk | 1912 |
| Dr. Southgate Leigh, Norfolk | Lynchburg | 1913 |
| *Dr. Stephen Harnsberger, Catlett | Washington, D. C. | 1914 |
| *Dr. Samuel Lile, Lynchburg | Richmond | 1915 |
| Dr. Joseph A. White, Richmond | Norfolk | 1916 |
| Dr. Geo. A. Stover, South Boston | Roanoke | 1917 |
| *Dr. E. G. Williams, Richmond. Owing to influenza epidemic and the World War, meeting was not held in 1918, and Dr. Williams held over as President | Richmond | 1919 |
| *Dr. Paulus A Irving, Farmville | Petersburg | 1920 |
| *Dr. Alfred L. Gray, Richmond | Lynchburg | 1921 |
| *Dr. E. C. S. Taliaferro, Norfolk | Norfolk | 1922 |
| *Dr. John Staige Davis, University | Roanoke | 1923 |
| *Dr. W. W. Chaffin, Pulaski | †Staunton | 1924 |
| Dr Hunter H. McGuire. Winchester | Richmond | 1925 |
| Dr. W. L. Harris, Norfolk | Norfolk | 1926 |
| Dr. J. Shelton Horsley, Richmond | Petersburg | 1927 |
| Dr. J. W. Preston, Roanoke | Danville | 1928 |
| Dr. J. Bolling Jones, Petersburg | Charlottesville | 1929 |
| *Dr. Charles R Grandy. Norfolk | Norfolk | 1930 |
| Dr. J. Allison Hodges, Richmond | Roanoke | 1931 |
| Dr. I. C. Harrison, Danville | Richmond | 1932 |
| Dr. J. C. Flippin, University | Lynchburg | 1933 |

*Deceased.
†In 1924, on account of Dr. Chaffin's illness, the first vice-president, Dr. H. H. McGuire, of Winchester, presided.

# PROGRAM

## MEDICAL SOCIETY OF VIRGINIA

## Sixty-fourth Annual Session

### Lynchburg, Virginia

### OCTOBER, 24, 25 and 26, 1933

*Headquarters:* VIRGINIAN HOTEL

#### SCIENTIFIC EXHIBITS

**Anteroom to Banquet Hall, Virginian Hotel**

1. Foreign Bodies in the Air and Food Passages; Roentgenograms of the Mastoid and Paranasal Sinuses; Plastic Surgery of the Face and Mouth; Diseases of the Eye; and Operative Treatment of Eye Squint—Drs. E. G. Gill, J. A. Pilcher, and Lawson Cabaniss, Roanoke.
2. Roentgen Ray Studies of the Prostate—Drs. W. W. S. Butler, Jr., and C. H. Peterson, Roanoke.
3. Comparison of Schilling Differential Count, Sedimentation Time and Lymphocyte-Monocyte Ratio in Tuberculosis of Childhood—Dr. W. A. McGee, Richmond.
4. Allergy—Dr. Warren T. Vaughan, Richmond.
5. Stomach and Duodenum, Roentgen Examination—Drs. Wright Clarkson and Allen Barker, Petersburg.
6. Unusual Lesions of the Chest—Dr. F. B. Stafford, Blue Ridge Sanatorium.
7. Subject not stated—Drs. V. W. Archer and R. V. Funsten, University.
8. Department of Clinical Education—Dr. M. E. Lapham.
9. Hydronephrosis—Dr. Austin I. Dodson, St. Elizabeth's Hospital, Richmond.

#### SCIENTIFIC PROGRAM
#### CLINICS

**Tuesday, October 24, 1933**

**Ballroom, Virginian Hotel—4:00 to 6:00 P. M.**

**Medical**—Dr. Louis Hamman, Baltimore, Md. (*invited guest*).

**Surgical**—Dr. Dean Lewis, Baltimore, Md. (*invited guest*).

#### GENERAL SESSION

**Tuesday, October 24**
**8:00 P. M.**

**Knights of Columbus Hall**

**Open to Profession and Public**

Call to Order—D. P. Scott, M. D., Chairman Committee of Arrangements.
Invocation.
Announcements.
Address of President—James Carroll Flippin, M. D., University.
Memorial Hour.
Address—Neoplasms of the Lung—Louis Hamman, M. D. (*invited guest*), Baltimore, Md.
Address—Dean Lewis, M. D. (*invited guest*), President of the American Medical Association, Baltimore, Md.

**Wednesday, October 25**
**Knights of Columbus Hall**
**9:00 A. M.**

The Diphtheria Immunization Program in Virginia—B. B. Bagby, M. D., Richmond.
Discussion to be opened by F. D. Wilson, M. D., Norfolk
A Mental Hygiene Program in the Making—Wm. F. Drewry, M. D., Richmond.
Discussion to be opened by David C. Wilson, M. D., University.
The Importance of Body Build in Determining Ideal Weight—W. Ambrose McGee, M. D., Richmond.
Discussion to be opened by L. T. Royster, M. D., University.

**10:00 A. M.**

**Symposium Diseases of the Stomach**

1. Physiology of the Stomach—W. R. Bond, M. D., Richmond.
2. Differential Diagnosis of Diseases of the Stomach—Blanton P. Seward, M. D., Roanoke.
3. Medical Treatment of Diseases of the Stomach—Alexander F. Robertson, Jr., M. D., Staunton.
4. Surgical Treatment of Diseases of the Stomach—C. Bruce Morton, M. D., University.

Discussion to be opened by
G. F. Simpson, M. D., Purcellville,
Wright Clarkson, M. D., Petersburg.

**Wednesday, 3:00 P. M.**

General Management of the Unconscious Patient, Emphasizing Posture in the Treatment—C. C. Coleman, M. D., Richmond.
Discussion to be opened by Manfred Call, M. D., Richmond.
Abdominal Surgery in Children—John S. Horsley, Jr., M. D., Richmond.
Discussion to be opened by Wm. B. McIlwaine, M. D., Petersburg.
Endometriosis with Reference to Intestinal Implantations—W. H. Goodwin, M. D., University.
Discussion to be opened by A. P. Jones, M. D., Roanoke.
X-Ray Aids in Prostatic Obstruction (*slides*)—W. W. S. Butler, Jr., M. D., and C. H. Peterson, M. D., Roanoke.
An Interesting Case of Coronary Thrombrosis—E. G. Scott, M. D., Lynchburg.
Discussion to be opened by H. B. Mulholland, M. D, University.
The Management of Acute Coronary Occlusion—William B. Porter, M. D., Richmond.
Discussion to be opened by W. H. Higgins, M. D., Richmond.

**Wednesday, 8:00 P. M.**

A Discussion of the Etiology, Pathology and Treatment of the Present State of General Practice—T. H. Daniel, M. D., Charlottesville.
Discussion to be opened by R. L. Page, M. D., Batesville.

State Medicine Problems—J. E. K. Flannagan, M. D., Salem.
Discussion to be opened by James King, M. D., Radford.

The X-Ray in Diagnosis of Perforation of Stomach and Intestine (*projection slide*)—M. H. Todd, M. D., Norfolk.
Discussion to be opened by G. Paul LaRoque, M. D., Richmond.

Diagnosis and Treatment of Gas Bacillus Infection—C. S. Stone, Jr., M. D., University, and H. B. Holsinger, M. D., Farmville.
Discussion to be opened by I. A. Bigger, M. D., Richmond.

The Conservative Management of Pelvic Infections—Linwood D. Keyser, M. D., Roanoke.

Surgery of the Biliary Tract—Frank S. Johns, M. D., Richmond.
Discussion to be opened by D. P. Scott, M. D., Lynchburg.

**Thursday, October 26**
**Knights of Columbus Hall**
**9:00 A. M.**

The Early Diagnosis of Primary Malignant Bone Tumors in Early Life (*lantern slides*)—Marshall J. Payne, M. D., Staunton.

Treatment of Infection of the Central Nervous System by Permanent Spinal Fluid Drainage: Report of a Case of Bacillus Pyocaneous Meningitis—R. Finley Gayle, Jr., M. D., Richmond.
Discussion to be opened by David C. Wilson, M. D., University.

A Resume of Pituitary Cases Occurring in the General Neurological Practice—Beverley R. Tucker, M. D., Richmond.
Discussion to be opened by Frank Redwood, M. D., Norfolk.

Further Observations upon the Continuous Intravenous Injection of Dextrose in Ringer's Solution—J. Shelton Horsley, M. D., Richmond.
Discussion to be opened by R. L. Raiford, M. D., Franklin.

The Relation of Iodine with Special Reference to Iodized Salt to the Incidence of Simple Goitre—Wm. H. Higgins, M. D., Richmond.
Discussion to be opened by N. G. Wilson, M. D., Norfolk, and H. B. Mulholland, M. D., University.

The Problem of Hair Growth—Thomas W. Murrell, M. D., Richmond.
Discussion to be opened by W. S. Ferguson, M. D., Lynchburg.

A Review of the Treatment of Pellagra—Staige D. Blackford, M. D., University.
Discussion to be opened by H. B. Mulholland, M. D., University.

**Thursday, 3:00 P. M.**

The Management of Cross-Eyes in Children (*lantern slides*)—John A. Pilcher, Jr., M. D., Roanoke.
Discussion to be opened by H. S. Hedges, M. D., Charlottesville.

Sedimentation Rate in Pulmonary Disease—Edgar C. Harper, M. D., and T. S. Jennings, M. D., Richmond.
Discussion to be opened by J. A. Proffitt, M. D., Burkeville.

A Rational Treatment of Pylorospasm—Charles P. Mangum, M. D., Richmond.
Discussion to be opened by S. A. Anderson, M. D., Richmond.

Inflammatory Tumors of the Small Intestine, with Case Report—Carrington Williams, M. D., Richmond.
Discussion to be opened by H. J. Warthen, M. D., Richmond.

Factors Influencing Mortality Rate in Carcinoma of the Large Intestine—A. Stephens Graham, M. D., Richmond.
Discussion to be opened by D. M. Thomasson, M. D., Lynchburg.

Uretero Sigmoid Anastomosis (*slides*)—R. P. Hawkins, Jr., M. D., Clifton Forge.

**Special Order—Report from the House of Delegates**
Induction of New President.

Adjournment.

## ANNOUNCEMENTS

### REGISTRATION AND INFORMATION BUREAU

**Virginian Hotel**
**Corner 8th and Church Streets**

Dues may be paid at Registrar's Desk. Please advise Registrar of any change of address.

### SCIENTIFIC SESSIONS

All sessions to be held at the Knights of Columbus Hall, 706 Church Street.

### BUSINESS SESSIONS

**Virginian Hotel**

**Council**—Tuesday, October 24, at 11:00 A. M., on Mezzanine.

**House of Delegates**—Tuesday, October 24, at 1:45 P. M., in room off lobby.

### EXHIBITS

**Scientific**—Anteroom to Banquet Hall, Virginian Hotel.

**Commercial**—Lobby, Virginian Hotel.

### GOLF TOURNAMENT

Boonsboro Country Club, beginning at 10:30 A. M., Tuesday, October 24.

### WOMAN'S AUXILIARY

**Young Woman's Christian Association Building**
**7th and Church Streets**

**The Virginia Pediatric Society** will hold its annual meeting at Hotel Carroll, Lynchburg, October 25, at 1:00 o'clock. Luncheon will be served. Dr. James A. Lyon, of Washington, D. C., will be the guest speaker, his subject being Diagnosis and Treatment of Rheumatic Heart Diseases in Children.

# Reports for the Sixty-fourth Annual Session of the Medical Society of Virginia

INTRODUCTORY NOTE

With a view to expediting the work of the House of Delegates and giving these members an opportunity to attend clinics and the scientific sessions of the Society, the Council, at its meeting in March, empowered the President to change our usual order of business by securing reports from the various committees and having them published in the issue of the MONTHLY just preceding our annual meeting.

We trust delegates and alternates will acquaint themselves with these reports and be prepared to discuss and act on them promptly when they are called in the House of Delegates.

## MID-SESSION MEETING OF COUNCIL

The Council of the Medical Society of Virginia held its mid-year meeting on March 17, 1933, in the Richmond Academy of Medicine Building. The meeting was called to order by Dr. J. C. Flippin, President, at 3:00 P. M. There was a hundred per cent attendance of councilors (Drs. R. E. Booker, P. St. L. Moncure, R. W Miller, Wright Clarkson, J M. Shackelford, J. T. McKinney, Percy Harris, J. E. Knight, C. B. Bowyer, and J. M. Emmett, of the 1st to 10th Districts, respectively), Dr. J. C. Flippin, President, Dr. R. D. Bates, President-elect, Dr. A. G. Brown, chairman of the Program Committee, by invitation, and the executive secretary-treasurer of the Society.

The President first asked for a statement as to the Society's finances. This showed a balance on March 1, 1933, of $11,264.31 in the checking and reserve accounts and securities. The decrease in balance of $956 25 since October 1, 1932, was explained as being due to three special appropriations authorized to be taken from the reserve if necessary—$1,041.67 for Prenatal and Postnatal Instruction, $448.30 for new furniture, and $89.53 as a refund on the Prohibition questionnaire sent out last year.

Following this, Dr. Flippin re-appointed Drs. R. W. Miller and Wright Clarkson as the committee to prepare and present a budget to the Council at its meeting next Fall. Dr. Miller suggested that Dr. Clarkson be chairman of this committee.

The Secretary-Treasurer stated that $1,000 of our securities matured April 2nd and wished to know what should be done with this money. In view of the amount we would have in the Savings Department of the bank, Dr. Bowyer offered a motion that we invest $5,000 in U. S. Government or State bonds. Discussion followed after which Dr. Emmett offered a substitute motion that the Budget Committee be empowered to invest $5,000 of the Society's money as they deemed advisable. Dr. Bowyer withdrew his motion in favor of Dr. Emmett's, which was seconded and carried.

The President said there was a matter brought up in Council last Fall which was referred to this meeting, the question as to amount of insurance to be placed on the Walter Reed Home in Gloucester County, Virginia. The Society is carrying insurance on $1,000 valuation at the rate of $25 for one year, but there would be a saving by insuring for five years at a time. Motion by Dr. Miller that we get an appraisal on the building and insure for five years at that amount was adopted.

In response to call for reports from Committees, Dr. R. D. Bates who, as President-elect, is also chairman of the Department of Clinical Education, said the appropriation for this Committee was reduced from $500 to $200 for the current year, but, as some expenses were brought forward from last year to be taken out of this and also the expense account for one of the Society's guests at its last meeting, there was only about $50 of the appropriation left, and this small amount would make it impossible for the Department to function properly. He asked for a further appropriation. Dr. Clarkson moved that the Department be given an additional $200, or as much thereof as needed, for its work for the balance of this year. Seconded. Dr. Bowyer asked if it was the plan of the Department to pay part of the expenses of invited guests to local society meetings. It was s ated if a local society requests a special speaker, it should defray the whole expense, but if the Department of Clinical Education sends a speaker, it should assume the expense when necessary. Dr. Clarkson's motion was then adopted, following which Dr. Bates thanked the Council for its action.

Dr. Flippin said he felt that an appropriation should be made in future budgets to cover expenses of invited guests at our annual meetings.

The President stated the Secretary had advised him there are a number of delinquents and she would like to know what should be done about them as we do not wish to lose members. It was suggested that she send the councilors lists of the delinquents in their respective districts that they might advise as far as possible plans to be adopted for collection of dues.

Dr. Flippin said he would not call for reports from the councilors by districts but that he would be glad to hear any they might wish to submit. In response to this, Dr. Knight stated that he had a communication to present from the Loudoun County Medical Society. Being advised that it was in order at this time, he read the following:

Leesburg, Virginia
February 18, 1933.

MY DEAR DR. KNIGHT:

At the recent meeting of the Loudoun County Medical Society I was instructed to call your attention to the recommendations which it made to the Medical Society of Virginia at its meeting in Richmond last November. The sentiment and desires of the leading physicians in the eighth congressional district are reflected in these recommendations. Doubtless you will recall that the House of Delegates took no action in this matter. These recommendations in essence were:

(1) That, in future, the election of presidents of the Medical Society of Virginia be predicated upon the numerical relationship of the rural to the urban membership, viz., 800:896.

(2) That, in future, delegates to the American Medical Association be predicated as the presidents.

(3) That, in future, chairmen of committees and committee membership be predicated as the presidents.

(4) That a section of rural medicine, similar to such sections as now obtain for pediatrics and eye, ear, nose and throat, be established.

I was further instructed to call your attention to the fact that it is most desirable that the council at its next meeting give these recommendations their most serious considera'ion with a view to endorsing them in time for presentation to the House of Delegates at its next meeting in the Fall, if, in their opinion, they should be endorsed.

I am sending a copy of this letter to the President and the President-elect of the Medical Society of Virginia.

Sincerely yours,

WM. O. BAILEY, *Secretary*,
*Loudoun County Medical Society.*

Dr. Knight then moved that the Council endorse the statements from this Society. There was no second to this but a number of questions were asked, following which the Council adopted a resolution to the effect that the communication be received but it did not feel that it was authorized to pass on it at this time but would consider the question.

The matter for next attention was the selection of a place for the 1934 meeting. Invitations were presented from the Lynchburg Academy of Medicine, Inc., for the Society to meet in Lynchburg, and one from the Princess Anne County Medical Society for us to hold the next session at Virginia Beach, in view of the facilities offered by the Cavalier Hotel. It was voted unanimously to accept the invitation to hold the next meeting in Lynchburg, October 24th, 25th, and 26th, if these dates prove agreeable to the local society.

Dr. Flippin stated that the work of the House of Delegates had taken so much time at recent meetings that delegates were unable to attend the scientific sessions and participate in the discussions and he felt something should be done to prevent this. It occurred to him that a plan to avoid a great deal of this routine and expedite the procedure of the meetings would be to have reports of the various committees published in the VIRGINIA MEDICAL MONTHLY in the issue preceding the meeting. This would give all delegates an opportunity to acquaint themselves with the work of the committees that they might be prepared to discuss and act on them promptly when they are called in the House of Delegates. Dr. Clarkson offered a motion which was seconded and carried that the President be empowered to have the reports of the committees published in advance to facilitate the progress of the meeting.

Dr. A. G. Brown, editor of the MONTHLY and chairman of the Program Committee, in answer to question from the President, announced that he had no report to present at this time but that his committee would meet soon to make plans for the program of the coming meeting.

Dr. Flippin said there was a matter which had been mentioned to him several times which he wished to bring to the attention of the Council to see how they felt about it—that of councilors succeeding themselves. There was some discussion as to the best way of getting the censensus of opinion of members, some feeling it might be well to sound out the doctors in their districts and others feeling this would be rather embarrassing to both parties in view of the fact that they had been regularly elected by delegates from their districts. Dr. Brown asked the privilege of the floor and stated that as the Council acts only in the interim between meetings and to them is entrusted especially the financial affairs of the Society, he felt it very necessary to have a body of men thoroughly familiar with the activities of the Society and felt it would be a mistake to change the personnel of the Council more frequently than necessary. He thought it would be much better to let this question drop unless there should be open opposition to the present plan.

Dr. Flippin then stated he had been advised of the resignation of Dr. Alex. F. Robertson, Jr., as a member of the State Board of Medical Examiners and that Governor Pollard had asked for nominations to fill the vacancy. However, Dr. J. W. Preston, secretary of the Board, had written that in view of the uncertainty relative to the redistricting of the State and the confusion which might arise as a result of appointing someone temporarily, and also because of a reduced budget, the members of the Board whom he had consulted felt it would be unwise to fill this vacancy now. Dr. Moncure, a member of the Board of Examiners, said he was familiar with the situation and felt no motion was necessary with regard to this question.

Dr. Wright Clarkson, a councilor who is also chairman of the Committee on Legislation and Public Health, spoke of several matters in which he had become interested as chairman of this committee. The Council approved his attendance at and deliberations in the meetings of which he spoke.

Dr. Flippin then asked the president-elect, Dr. R. D. Bates, to take the chair that he might be able to catch the afternoon train. There being no further business, however, the meeting adjourned.

AGNES V. EDWARDS, *Secretary.*

### Report of Executive Secretary-Treasurer

*To the President and Members of the House of Delegates:*

At our meeting in 1932, we reported a total of 1,853 active and associate members. For the first time the number of new members has not cared for the losses as we find ourselves with about twenty-five to thirty less than at this time last year.

Likewise our financial condition is not up to par, though we have lived well within the budget approved. Provision was made in the budget for use of part of our reserve fund for special appropriations. A $1,000 bond of our reserve fund has been placed with the Richmond Mortgage and Loan Corporation in exchange for a registered transferable certificate issued by the trustee, this to be returned to us as the trustee can and may collect as much as 5 per cent of the principal. To date, we have collected $50.00 of the principal and $2.50 in interest on same. With brightening conditions in business, we expect to get our share in increased revenue.

Detailed figures will be given on above reports at the meeting of the House of Delegates in Lynchburg.

Our committees have been active in promoting the welfare of the Society and the executive offices have rendered assistance upon every call. The educational work of the Society has been of high character and has also aided in promoting a feeling of good fellowship.

There has been no change in the number of component societies—fifty-one representing eighty-eight counties and the city of Alexandria. The inactivity of some of the societies is due largely to the small number of doctors in many counties.

The President, Dr. Flippin, appointed Dr. Dudley C. Smith as a delegate and Dr. H. B. Mulholland an alternate-delegate to the American Medical Association to complete our quota. Our Society was represented at the Milwaukee meeting of that Association by Drs. Warren F. Draper, Dudley C. Smith, and Southgate Leigh.

In accordance with action taken by our House of Delegates at its Richmond meeting, our medical books with the exception of those needed for use in our office have been turned over to the Library of the Medical College of Virginia, where they have been indexed and are available to members, the only cost being return postage.

In spite of the brevity of this report, a large amount of work has been accomplished at headquarters. Our statement would be incomplete, however, without a word of appreciation to our members for the splendid cooperation they have given us.

AGNES V. EDWARDS,
*Executive Secretary-Treasurer.*

### Report of Committee on Scientific Work and Clinics

The members of the committee were notified November 14, 1932, of their appointment by the President of the Society, Dr. J. C. Flippin. Because it has been noticed in the past that it was perfectly impossible to obtain members interested in scientific exhibits at an early date, the committee was relatively inactive until August. At that time physicians throughout the State were written to and seen regarding scientific exhibits for the Lynchburg meeting. At the present moment a half dozen or more scientific exhibits have been promised and additional physicians are being interviewed with the object of obtaining a larger number of scientific exhibitors.

Tentative arrangements have been made with Dr. Louis Hamman, of Baltimore, Maryland, and Dr. Dean Lewis, of Baltimore, to present Medical and Surgical Clinics, respectively.

The financial report of the committee cannot be made at this time other than to say that it seems certain that the $50.00 allotted to the committee will be completely expended in preparing the exhibits No charges have been made so far for correspondence which has been handled by the individual members of the committee.

Attention is called again to the report of last year which indicated the desirability of obtaining certain permanent properties for the use of the exhibit committee. It is hoped that a larger allowance of money may be allocated to the committee in this and subsequent years.

Respectfully submitted,
J. L. WRIGHT, M. D.,
J. S. HORSLEY, JR., M. D.,
C. B. MORTON, M. D., *Chairman.*

### Report of Committee on Legislation and Public Health

*To the House of Delegates, Medical Society of Virginia:*

The Committee on Public Health and Legislation has been quite active during the year in cooperating with various national and state organizations in an effort to promote the welfare of our profession. Among these activities have been informal meetings with the "Virginia Committee on Reduction of Governmental Expenditures" and with the "Workmen's Compensation Committee of the Virginia Manufacturers Association."

We have given active cooperation to Dr. William C. Woodward, Director of the Bureau of Legal Medicine and Legislation of the American Medical Association and to the State Board of Health in such matters as have been brought to our attention.

The activities of the recent meeting of the State Legislature were definitely limited to non-medical subjects and our only work in connection with this was to safeguard against the possibility of undesirable medical legislation.

Respectfully submitted,
WRIGHT CLARKSON, *Chairman,*
PHILIP ST. LEGER MONCURE,
J. W. ROBERTSON.

### Report of Publication and Program Committee

The Publication and Program Committee held a meeting in the early summer. At this meeting the subject for a symposium for the Lynchburg meeting was decided upon, and the members of the Society to be invited to conduct the symposium were selected.

The committee determined to follow the same policy used last year of limiting the number of papers. This plan received the endorsement of the Society.

The Committee met again September 11th, for the purpose of arranging the program. The President, Dr. J. C. Flippin attended this, and the early summer meeting, and participated in the business transacted.

The publication of the Society, the VIRGINIA MEDICAL MONTHLY, needs no comment here as it is in the hands of the members each month. The expense of conducting this publication in the face of the decline in receipts from advertising is a matter of concern that may require special consideration at your hands. Strict adherence to the rule of accepting only "ethical" advertising limits the possible business in this direction.

Respectfully submitted,
ALEXANDER G. BROWN, JR., *Chairman.*

### Report of Medical Economics Committee

*Mr. President and Members of the House of Delegates:*

The Medical Economics Committee has had no questions brought to their attention during the past year.

The economic conditions of the country being in such an unsettled condition, your Committee has not been able to determine what should be considered, consequently has been inactive.

Respectfully submitted,
JOHN O. BOYD, *Chairman.*

### Report of Committee on Medical Education and Hospitals

Incident to the unparalleled, depressed economic conditions prevailing since the last report of your committee, most matters pertaining to medical education and the conduct of hospitals have been forced to mark time; however, it seems proper to here direct your attention to certain trends as relates to the future of both.

#### MEDICAL EDUCATION

In its report of last year your committee commented upon the fact that a greater number of students were applying in the aggregate to the Medical Colleges of this country than could be accommodated even by crowding. From current reports there is not yet a diminution in the number applying and statistics show that there is a quite considerable overflow to foreign schools. Looking to a remedy none is now apparent; however, as pointing the way it is evident that the colleges are tightening up upon their entrance requirements not only as relates to educational qualifications but also to character, habits, morals, and mental adaptability. Likewise

Boards of Examiners are scrutinizing most carefully the credentials of those presenting diplomas from foreign institutions.

In relation to the oversupply of physicians throughout the country it is notable that there have been licensed in our own state during the present year something more than 160 physicians, the largest number licensed in any one year in more than twenty.

Incident to the increasing number of young men studying medicine in Virginia it is no surprise to observe the rapidity with which many locations in the smaller towns and villages of the state, long without a physician, are now being filled. Whether this is a temporary or permanent trend can only be surmised.

There are increasing evidences that the specialties are approaching a point of saturation and incident to the discussions which have taken place in recent years relating to the encroachment of the specialties upon general practice a strong argument is being made at this time in some quarters, that in the way of special preparations for general practice students should be given the advantage of two years internship thereby broadening them in the scope of work they may be fitted to do, so as to bridge the gap as between general practice and the specialties. In further relation to preparation for general practice the question has also been raised by some as to whether our schools are sufficiently stressing the importance of Materia Medica, Therapeutics, and Prescribing. That there may be some grounds for criticism in this respect is evidenced by the readiness with which so many recent graduates fall into the habit of depending in too large a measure upon the recommendations of detail men and advertising matter of drug houses and follow the line of least resistance in prescribing high-priced proprietary remedies the theraptutic properties of which are unknown, when in many instances U. S. P. and National Formulary Products would be more advantageous to all concerned. Undoubtedly this is adding quite considerably to the high cost of sickness relative to which all of us are concerned.

### Clinical Education

While it cannot be otherwise than that the economic struggle of the past three years has discouraged many practitioners and has tended to a blighting effect upon effort looking to self-improvement, it is a source of gratification to those interested in the progress of the profession in Virginia that the Program of Obstetrical teaching fostered by the Society has been so well received in all sections of the state. It is also gratifying to know that there is an evident desire upon the part of the profession as a whole for other courses of a similar character and that a movement is gaining ground looking to the establishment of a course in Pediatrics, similar to that which has been given in Obstetrics. Your committee would earnestly recommend that the House of Delegates give its best efforts to devise means of carrying on the work.

### Hospitals

In its report of last year your committee touched upon the manifest abuses incident to the hospitalization of veterans whose disabilities were not service-connected. Since that time conditions have changed and there seems to be no present grounds for complaint. In this connection it is proper to state that criticisms have arisen as relates to one or more of our State Institutions in which it is alleged that certain cases which properly should have been referred to private institutions have been cared for. It is to be hoped that the officers of the State Institutions will formulate such rules touching the borderline cases here referred to as will obviate future misunderstandings.

Passing mention should be made of an innovation in the financing of hospitals which has recently spread into this state. Reference is made to the appointment of business managers representing one or more hospitals, whose function it is to solicit a fixed monthly or yearly fee from individuals or families which subscription entitles them to hospitalization in case of sickness or accident. Your committee is not sufficiently familiar with the working of the plan to justify comment either as to its ethics or practicability.

In common with institutions of all sorts the hospitals throughout the state both private and public have had unusual problems to meet throughout the past year, for aside from lessened incomes the demand upon their resources has been exceedingly heavy necessitating the strictest economy. In the face of these problems almost without exception in so far as your committee is informed each has carried on and fulfilled its function in the community in a creditable way and while each has its individual problems your committee knows of nothing in this connection demanding your attention.

Respectfully submitted,
Dr. J. T. Buxton,
Dr. W. O. Bailey,
Dr. J. W. Preston, *Chairman.*

## Report of Membership Committee

Nothing has come up during the year for the consideration of the Membership Committee. As is our custom, however, the names of those who have died since our last meeting will be read at the Memorial Hour at the General Session on the first evening of our meeting.

In recognition of his work as President of the Medical Society of Virginia during the past year, we wish to propose the name of Dr. J. Carroll Flippin for honorary membership in the Society.

J. A. White, *Chairman.*

## Report of Committee on Ethics and Judiciary

Up to the present time the chairman on Ethics and Judiciary has not had any matters referred for consideration since the last meeting of the Society, in October, 1932.

St. Geo. T Grinnan, *Chairman.*

## Report of Walter Reed Commission

The Walter Reed Commission desires to report that the birthplace of this hero is open to the public every day in the year. The physical condition of the property is good except a coat of paint is needed; also a hard surfaced walkway from the main road to the front door is desired.

The Commission owes no money, but has only a few dollars on hand. The Register shows that many persons have visited the shrine, and its interest and affection in the hearts of the people is growing.

Clarence Porter Jones, *Chairman.*

## Report of Committee on Maternal Welfare

*To the House of Delegates, Medical Society of Virginia:*

The Committee on Maternal Welfare, consisting of Dr. P. W. Miles, Danville, Va., Dr. Greer Baughman, Richmond, Va., Dr. W. R. Payne, Newport News, Va., Dr. F. O. Plunkett, Lynchburg, Va., and Dr. Tiffany J. Williams, University, Va., wish to make the following report:

The Committee met on Sunday, April 30, 1933,

at the home of Dr. Greer Baughman, in Richmond, Va.

In addition to the Committee, Dr. B. B. Bagby, Director, Bureau Child Health, State Department of Health, Richmond, was present by invitation.

The following resolutions were adopted:

Resolved: That the Report of the Maternal Mortality in Virginia in 1927-1928 made by the United States Children's Bureau be printed in the Virginia Medical Monthly; (2) that the State Department of Health be requested to have reprints made and distributed to every physician in the state.

Resolved: That the Maternal Welfare Committee send a resolution to Dr. Sidney B. Hall, stating that this Committee is heartily in favor of the presentation of a birth certificate before a child is allowed to register at school.

Respectfully submitted,
P. W. Miles, *Chairman.*

### Report of Committee on Child Welfare

*To the House of Delegates, Medical Society of Virginia:*

For the Committee on Child Welfare, consisting of Dr. T. H. Daniel, Charlottesville; Dr W. W. Wilkinson, LaCrosse; Dr. W. A. McGee, Richmond; Dr. C. E. Conrad, Harrisonburg, and Dr. W. P. Jackson, Roanoke, I wish to make the following report:

During the past year not much was brought to the attention of our Committee. One meeting was held in February, at Richmond, together with the Child Welfare Committee of the State Pediatric Society, headed by Dr. F. D. Wilson, chairman. At that meeting plans were discussed for increasing opportunities for instruction in Pediatrics somewhat similar to that being done now in Prenatal and Postnatal instruction. Mr Eutsler had previously reported to us that Pediatrics was the subject next most interesting and most desired by the physicians of the State.

These two committees met the afternoon of the same day with the Department of Clinical Education and discussed the problems involved. Much interest in the subject was shown by all present, but no definite program was worked out then. However, it is hoped that very soon some such courses will be available.

The Beginner's Clinics, conducted throughout the State, examined a considerable number of pre-school children, although the number is not as large as we would like it to be. The reason for this we think is the same as that pointed out in last year's report.

We feel very deeply the loss of a member of our Committee, in the death of Dr. A. T. Finch. For several years, he has been very active in pre-school child health programs and a most valuable member of our Committee. We shall miss his wise counsel and hearty cooperation.

Respectfully submitted,
W. P. Jackson, *Chairman.*

### Report of Committee on History of Medicine

The third and final volume of the History of Medicine in Virginia is now in the hands of the publishers and will, in all likelihood, appear before the first of the year. The completion of this task was made possible by the generous response of the Council to an appeal for assistance in framing a new contract with the publishers who, in view of losses on the former volumes, were unwilling to bring out this last book on the same conditions under which the former volumes were issued.

The chairman of your committee wishes to express his gratitude to the Society for their patience and backing throughout the five years during which this work has been in process. Having completed the work to which it was assigned, I respectfully request that this committee be discharged.

Wyndham B. Blanton, *Chairman.*

### Report of Committee on Anesthetists and Laboratory Technicians

*To the House of Delegates, Medical Society of Virginia:*

In its report for the year 1931-1932, the Committee on Anesthetists and Laboratory Technicians outlined briefly the work of the Registry of Technicians of the American Society of Clinical Pathologists and advocated that the Medical Society of Virginia endorse the program of this Registry.

The Board of the Registry investigates training schools for laboratory technicians and conducts examinations of individuals applying for their certificate designating the holder as a "Laboratory Technician." There is a preliminary investigation of the applicant. Examinations are conducted by members of the American Society of Clinical Pathologists. The registration fee is ten dollars, and the registrant pays a one dollar annual renewal fee.

The following paragraphs pertaining to eligibility of applicants, a code of ethics, and registration of schools for laboratory technicians are copied from pamphlets issued by the Registry of Technicians of the American Society of Clinical Pathologists, 234 Metropolitan Building, Denver, Colorado, on November 1, 1932, and June 8, 1933:

#### Eligibility

"Applicants for certificates must have graduated from an accredited high school or have received an education equivalent thereto. In addition, they must have taken a year's course in college chemistry and biology or an equivalent thereof, such as graduation from an approved training school for nurses, or credits in allied subjects in basic sciences, which, in the opinion of the Board, are of equal value to the technician. Lastly, they must have had full twelve months' instruction in an approved training school for technicians or an apprenticeship for at least a year under a qualified clinical pathologist.

"A laboratory worker who fails to fulfill the above requirements and who received his or her training prior to 1932 and whose technical qualifications are vouched for by at least three reputable physicians (at least one of whom shall be a recognized clinical pathologist) may, by action of the Board, be considered eligible."

#### Code of Ethics

"All registered technicians and technologists shall be required to strictly observe the Code of Ethics as defined by the American Society of Clinical Pathologists, namely, that they shall agree to work at all times under the supervision of a qualified physician and shall, under no circumstances, on their own initiative, render written or oral diagnosis except in so far as it is self-evident in the report, or advise physicians and others in the treatment of disease, or operate a laboratory independently without the supervision of a qualified physician or clinical pathologist."

#### Registration of Schools for Laboratory Technicians

"The Board shall investigate, classify and periodically inspect through an accredited repre-

sentative, the schools and laboratories which conduct a training course for laboratory technicians.

"These schools and laboratories may register with this Board and receive an annual certificate of registration, provided the course of training given meets the approval of this Board. An annual registration fee of one dollar shall accompany the application.

"Schools and laboratories offering a course of instruction to prospective laboratory technicians shall subscribe to the same ethical requirements observed by individual physicians and medical organizations. Institutions which are not under the direct supervision of a recognized clinical pathologist or lack the adequate teaching force, material and equipment or which, in the opinion of the Board of Registry, resort to unethical advertising or charge unreasonably high fees shall not be approved by the Board."

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"The large demand on the part of hospitals and physicians for trained technicians has led many persons with inadequate training to enter this field with resultant injury to patients and discredit on the competent workers. The evil has been fostered by unscrupulous advertising schools who offer short courses in laboratory technic at exorbitant rates under the lure of high salaries to their graduates. It was in order to relieve this chaotic condition that the American Society of Clinical Pathologists instituted the Bureau of Registry to issue certificates to those technicians who are properly qualified, as well as exercise supervision over the schools for training them.

"It is the endeavor of the Society to invest this useful calling with the dignity that it deserves and to create a proper spirit of appreciation for the members of a vocation which is an important auxiliary to the medical profession."

Minimum Requirements for Approved Training Schools for Laboratory Technicians

"1. The school must be under the direct supervision of a recognized clinical pathologist.

"2. To insure sufficient material for study and demonstration, the school or director should have an intimate affiliation with a general hospital of at least one hundred bed capacity.

"3. Applicants to the school must have had a year's college course in chemistry and biology in addition to a high school diploma before being admitted for training.

"4. The course of study must cover a period of at least twelve months' duration, on a full time schedule.

"5. The fees charged to students must not exceed reasonable limits. Schools organized primarily for profit are not eligible for approval."

We realize that there are many capable laboratory technicians in Virginia who adequately meet the needs of the physicians and institutions employing them, who do not meet the training requirements of the Board of Registry of the American Society of Clinical Pathologists These may well continue in their present capacities without meeting demands of further training and registration. Probably, also, in the future there will be instances in which physicians will find it preferable to train technicians for their special technical needs. Nevertheless, we feel that some standards should be recognized for the training of technicians in general, who may be called upon to carry out various laboratory procedurcs in the different positions they may fill. We believe that the standards of the Registry of Technicians, above outlined, meet this need.

We wish, therefore, to submit the following resolution: Resolved, that the Medical Society of Virginia shall accept as its standards of the qualifications of laboratory technicians those standards which constitute the minimum requirements of the Registry of Technicians of the American Society of Clinical Pathologists relating to certification of laboratory technicians and of schools for laboratory technicians.

The chairman recommends that a physician interested in and familiar with matters pertaining to anesthetists be appointed chairman of the Committee on Anesthetists and Laboratory Technicians for the year 1933 1934. As a group, the members of this committee think that their present scope of work should be divided between two separate committees, one for anesthetists and one for laboratory technicians. In which case the present chairman recommends that a physician more concerned with the training of clinical laboratory technicians be appointed chairman of the committee for laboratory technicians.

Respectfully submitted,
W E. Bray,
I. H. Goldman,
H. H. Trout,
L. C. Pusch, *Chairman.*

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### Report of the Department of Clinical Education

As Chairman of the Department of Clinical Education, I have the privilege of reporting that the work of this agency of the Medical Society has continued the same activities during the past year as during the administrations of my three predecessors, Drs. Hodges, Harrison and Flippin. The work of the Department has been regularly reported in the issues of the Virginia Medical Monthly and only a summary of those activities is attempted here.

The personnel of the Department has remained unchanged during the year except that the President-elect succeeded to the Chairmanship. Besides the Chairman, Drs. Ray Moore and H. S. Daniel were again appointed as representatives of the Medical Society, Drs. Manfred Call, L. T. Royster and W. F. Draper represent respectively the Medical College of Virginia, the University of Virginia and the State Health Department, and Mr. George W. Eutsler, of the Extension Division of the University of Virginia is Executive Secretary.

The duty of the Department of Clinical Education is to stimulate and assist in the holding of scientific programs by the component societies. Its appropriation, reduced this year to $400, has been expended for defraying travelling expenses of clinicians and for announcements and notices concerning clinical meetings. The Clinch Valley Medical Society has continued to arrange for invited speakers through the Department. Three such speakers went from Richmond to the meeting in October, two in April, and two more have been scheduled for the meeting this September. The Medical Society of Northern Virginia, the Danville-Pittsylvania Academy of Medicine and the Augusta County Society have secured speakers through the Department. The regular clinics held at the Medical College of Virginia and the University of Virginia Hospital are well received by the profession and are emphasized in notices and announcements of the Department.

Besides the oversight of the program of instruction in prenatal and postnatal care, a detailed report of which is attached, the Department's major concern during the year has been the establishment of clinics

in pediatrics, the subject chosen as the preferred study by the majority of members of the courses in prenatal and postnatal care. Dr. Frank D. Wilson and Dr. W. P. Jackson, chairmen of the child welfare committees of the Pediatric Society of Virginia and of the Medical Society of Virginia, requested the Department to institute a program of pediatric instruction in all parts of the state by means of classes arranged in circuits and of one-day clinics in centrally located cities. Last spring action was deferred upon the first method because of lack of funds, but the Department has now decided to make such an attempt and its recommendation to that effect is reported later. For the arrangement of one day pediatric clinics, it addressed letters urging such emphasis to the larger county and regional societies, several of which, notably the Clinch Valley, Northern Virginia and Norfolk County societies, either began children's clinics or maintained the adequate program already begun. Interest on the part of other societies, such as the Lynchburg Academy and the Southwestern, was also manifested.

The report of the Joint Committee on Prenatal and Postnatal Instruction of the Department of Clinical Education as submitted by its Chairman, Dr. Lee E. Sutton, Jr., follows:

> At the time this report is drafted, the Joint Committee has completed one year and four months of the two-year program of intensive post-graduate instruction in prenatal and postnatal care first authorized by the Medical Society at its meeting in Roanoke in 1931 and unanimously approved at its Richmond meeting in 1932. On both occasions an annual appropriation of $2,500 was voted to supplement the grants of the Commonwealth Fund.
>
> The personnel of the Joint Committee was changed during the year only by the retirement of Dr. J. Allison Hodges, who was succeeded by the President-elect and Chairman of the Department of Clinical Education. The other three members representing the Medical Society of Virginia are: Dr. I. C. Harrison, Dr. H. S. Daniel, and Dr. R. A. Moore. From the Medical College of Virginia the representatives are: Dr. Manfred Call and Dr. Lee E. Sutton, Jr., and from the University of Virginia, Dr. J. C. Flippin and Dr. L. T. Royster.
>
> By the 15th of September Dr. Lapham, the Joint Committee's Field Clinician, will have completed thirty-three courses of twenty hours' instruction. Except for two short courses of two weeks each on the Eastern Shore and in Bedford, the classes have been arranged in circuits so that the instructor spends one day each for ten weeks in the class center. Three hundred and twenty-seven meetings have been held, each with an average of fourteen present. The physicians who are members of these classes—membership including those who signed the enrollment card and attended at least once and those who without the formality of enrolling attended at least four times—total, 421. These members, on the average, attended three-fourths of the meetings. In addition over 150 visitors were present, chiefly physicians but including internes, medical students and nurses not eligible to membership. In every case, in conformity with the instructions of the Medical Society at the inauguration of this program, the organization of a class has been undertaken only after it was approved by the local profession. Nearly forty societies have formally voted their endorsement of the course, every vote being unanimous except one. After approval for organization was given, every community to which Dr. Lapham's services were offered has carried through the formation of a class.
>
> The territory covered in these classes includes almost all of the southern portion of the state: in the first circuit the Lynchburg-Staunton-Charlottesville area, in the second circuit the Richmond-Petersburg-Farmville area, in the third circuit Roanoke to Wytheville and points between, in the fourth circuit Norfolk to Franklin, in the fifth circuit Norton and the counties adjacent to Wise, in the sixth circuit Tazewell to Bristol. The seventh circuit now in formation to begin in the week of September 18th includes the only counties unserved on the southern border, those in the vicinity of Martinsville, Danville and South Boston.
>
> The Field Clinician has reported the demonstration of 220 clinical subjects in classes and the examination of 403 patients in educational consultations held at the request of individual physicians. The increasing emphasis upon the individual conferences is due to the desire of members to secure expert instruction in their own problems and in part, the Field Clinician reports, to the fact that the chief handicap to the complete success of the work is the inability of the local groups to arrange for an adequate supply of clinical material.
>
> While the lack of clinics has been the one source of complaint about the program, the comments of the members themselves prove their high regard for the advantages of their study. In the written comments which each member is asked to furnish anonymously, 213 of 219 replies have rated the lectures as excellent or good, 100 of 189 replies consider the clinics either excellent or good, 204 of 210 replies consider the course worth the cost in time and money, and 200 of 206 desire further courses in other subjects. The subject most generally preferred is pediatrics with a vote of eighty-five.
>
> Considerable interest in the Virginia program of post-graduate education is manifested in other states. In May, Dr. J. Allison Hodges, at the invitation of the Maternity Center Association in New York, described the Virginia projects before a large gathering of important personages. Visiting physicians from North Carolina, Tennessee and West Virginia were so impressed by visits to Dr. Lapham's classes that they sought complete information about the work with a view to inaugurating it in their own states. Similar information was requested by medical society officials in Indiana and Pennsylvania. In Pennsylvania, indeed, the President of the state society is delivering his presidential address on the subject of post-graduate education with the Virginia plan as an illustration of what may be accomplished.
>
> The financial aspects of the program are encouraging in the sense that expenditures and receipts have been kept within estimates, as the following tabulation reveals:

**Financial Statement**

May 1, 1932—April 30, 1933

| | Annual Budget | Expenditures |
|---|---|---|
| Travel and salary of Field Clinician | $ 7,000 | $ 7,000.08 |
| Instructional aids | 2,000 | 447.37 |
| Office and staff assistants | 2,300 | 2,299.99 |
| Travel for organizing classes | 500 | 542,02 |
| Supplies and communication | 500 | 803.58 |
| Reserve fund | 200 | ------ |
| | $12,500 | $11,090.04 |

RECEIPTS

| | | |
|---|---|---|
| Commonwealth Fund | | $ 7,500.00 |
| Medical Society of Virginia | | 2,500.00 |
| Enrollment fees at $5 per member: | | |
| 1st Circuit | $390.00 | |
| Eastern Shore | 65.00 | |
| 2nd Circuit | 420.00 | |
| 3rd Circuit | 245.00 | |
| 4th Circuit | 330.00 | |
| Bedford | 40.00 | |
| 5th and 6th Circuits | 100.00 | |
| | $1,590.00 | 1,590.00 |
| Refund from Maternity Center Association | | 40.06 |
| | | $11,630.06 |

May 1, 1933—September 7, 1933

| | Annual Budget | Expenditures |
|---|---|---|
| Travel and salary of Field Clinician | $ 7,000 | $2,333.36 |
| Instructional aids | 200 | 76.84 |
| Office and staff assistants | 2,340 | 777.76 |
| Travel for organizing classes | 460 | 2.42 |
| Supplies and communication | 600 | 98,67 |
| | $10,600 | $3,289.05 |

RECEIPTS

| | | |
|---|---|---|
| Commonwealth Fund | | $2,716.10 |
| Medical Society of Virginia | | 833.33 |
| Enrollment fees at $5 per member: | | |
| 4th Circuit | $ 5.00 | |
| 5th and 6th Circuits | 267.50 | |
| | $272.50 | 272.50 |
| | | $3,821.93 |

In confirmation of the testimony of members of the classes is the action of the Commonwealth Fund in not only renewing but increasing the grant for the second year's work. The $5,000 originally reserved, or as much thereof as might be required, was supplemented by the addition of $2,500 remaining from the first year's appropriation. The program for the second year until April 30, 1934, is, therefore, cared for under a budget of $10,600, a decrease of $1,900 from that of the first year.

At the completion of the seventh circuit in and around Danville in December, the Joint Committee has in prospect two additional short courses, in Giles and Alleghany Counties, and four additional circuits, on the Peninsula from Richmond to Hampton, in the northern part of the Valley of Virginia, in the Orange-Fredericksburg-Culpeper territory, and in the vicinity of Manassas and Alexandria.

In view of these considerations, and in realization of the financial plight of the Medical Society, the Joint Committee at its meeting on September 11th unanimously adopted a resolution recommending the continuance of the program of prenatal and postnatal instruction in order that the courses might be offered in every section of the state. It was further unanimously recommended that the Medical Society maintain its support of the program, if not in the present proportion, at least in an appreciable amount.

The Department of Clinical Education, having received and approved the report of its subordinate agency the Joint Committee, unanimously recommends an appropriation of $1,500 to carry on for five months the work of the Joint Committee and to furnish a small supplement to the appropriation for the Department of Clinical Education in order that the Department may develop experimentally a program of pediatrics teaching, authorizing as instructors the eighteen members of the Pediatric Society of Virginia who have volunteered their services for this work. The Department also went on record as recognizing the desirability of following up the classes in prenatal and postnatal instruction and has undertaken to effect an arrangement to this end.

The work of these two agencies, the Department of Clinical Education and the Joint Committee, illustrates the extent to which the Medical Society of Virginia has ceased to be, in the words of a former president, solely a business and social organization and has become a scientific and educational society. It carries on the educational tradition established by the Medical Society at its Norfolk meeting in 1930 when it unanimously approved a resolution that the provision of continuing educational facilities should rightly be made a part of the system of medical education in Virginia. This tradition was still more firmly fixed by the Society's action in setting aside a trust fund from life memberships, the income from which is to be devoted to post-graduate education, and in putting the responsibility for the administration of educational activities upon the shoulders of its President-elect. These steps have led to significant progress already accomplished in the field of obstetrics and gynecology and promised in respect of pediatrics. It is the view of the Department that this constructive program of continuous educational opportunities offered to every physician in the state should undoubtedly be a major function of the Medical Society of Virginia, and it urges that the work be continued with undiminishing vigor.

R. D. BATES, *Chairman.*

**Report of Committee on Group Societies**

Due to the uncertain conditions of the Redistricting Act in the State of Virginia, your committee, after consulting with the President of the Medical Society of Virginia, has made no changes as to the Group Societies. So far as we could ascertain, there has been very little work done this year, either in organizing new Group Societies, or the reorganizing and combining of old groups. There have been no questions concerning the Group Societies brought up before the committee.

Respectfully submitted,

DR. W. B. MCILWAINE, *Chairman.*
DR. D. M. KIPPS.
DR. E. L. KENDIG.

**Report of the Committee on Public Relations—State and County**

The final report of the Committe on the Costs of Medical Care is a valuable report and your Committee desires to express its deep appreciation of

the extensive research work that was done by the National Committee and of the large amount of valuable data accumulated.

The object of this study was an attempt to throw light upon the various costs that result from illness, from the treatment, and from the prevention of disease. The inference that the high costs of medical care is due to excessive charges by the medical profession is a false assumption. Most members of the medical profession are underpaid. Even in 1929, one-third of all private practitioners had net incomes of less than $5,000.00 a year.

There are in the United States 121,000 physicians and surgeons in private practice, and 21,000 connected solely with medical institutions or hospitals. There are 56,800 dentists in private practice, and 5,600 dentists connected with institutions or hospitals. Including graduate nurses and practical nurses and the various cults, there are 554,100 individuals in private practice, and 530,400 connected with institutions, making a total of 1,084,500. The people of the United States in 1929 spent $3,656,000,000 for all forms of medical service, including those purchased indirectly through taxes and other funds. This is practically $30.00 per capita per annum, and in 1929 constituted about 4 per cent of the money income of the country. This, however, is obviously not excessive for the people as a whole when it is recalled that during the same year $5,807,000,000 were spent for tobacco, toilet articles and recreation, and $9,475,000,000 for automobile use and other travel. The unequal distribution of the expense and the unpredictable nature of illness often creates a hardship. Approximately 50 per cent of all families of two or more members had during 1928 total incomes of less than $2,000 per year, and 40 per cent more had incomes of between $2,000 and $5,000. Physicians in private practice in 1929 received $1,090,000,000, and dentists $445,000,000, while $715,000,000 were spent for drugs and medicines, most of which were purchased directly from the retail druggists or general merchants. Less than one-third of the drugs and medicines consumed annually are used on the express order of physicians. The annual sale of patent medicines amounts to $360,000,000, most of which is money entirely wasted and constitutes about 10 per cent of the total spent for all medical service and commodities. An additional sum of $125,000,000 was spent upon the unqualified cults.

This report brings sharply to the mind of anyone that reads it carefully the inadequacy of the medical care received by the large part of our population. This is, of course, no new discovery, but is a fact with which we have long been familiar, in a general way. The Committee, however, emphasizes in its fact-finding investigations the grossness of the inequalities of medical service received by different population groups and undertakes to offer a method of providing adequate service, at a reasonable cost, to all classes of the population. There can be no disagreement as to the desirability of accomplishing this end, but the methods proposed should be subjected to critical examination and analysis. Changes are being advocated that are far-reaching and even revolutionary in character. An organization is being effected that proposes to go into action on a wide front, with the avowed intent of bringing into practice the recommendations of the Committee. What will be the result of these changes if they actually become a reality? Will the sum total of benefit outweigh the losses? In considering the problem, there are certain questions that immediately enter the foreground. Will the quality of medical service be lowered? Will the advancement of medical science be stimulated or retarded?

It might very fairly be pointed out that the responsibility for the conditions brought out in the Committee's report, in no sense rests on the medical profession alone. The problem is much more basic and has its roots deep in our economic and social structure. Inequality of opportunity, and inequality of what men receive for their labor, inevitably lead to inequality in their ability to purchase food, clothing and shelter as well as medical service. In no other department of our life has so great an effort been made to equalize these differences by a sliding scale of charges and through the care of millions of individuals without charge. As citizens, it is our duty to correct all of these inequalities as far as possible, but as physicians, we should look first to the future of the science of medicine. All proposals looking to radical changes affecting the profession should be examined critically as to their effect on the progress of medicine as well as to the possible immediate benefit to the people as a whole.

Your committee feels that it is unnecessary for its purposes to adopt either in whole or in part any recommendations of either the Majority or the Minority Report, but it is the duty of your committee to consider the Reports largely from the viewpoint of the factual data and to make such recommendations as in its judgment would be appropriate and applicable to the conditions in Virginia. It is highly probable that recommendations suitable for a northern or western country would not be satisfactory for this State, and that recommendations that might even be applicable to the majority of the territory of the United States would not be appropriate for Virginia. It is also obvious that recommendations applicable to Virginia may be unsuitable for other sections of the country.

We think it our duty, therefore, to make such recommendations as seem best suited to this State, realizing, too, that even different sections of the State may be differently affected.

Group practice is no new thing. Numerous such associations have been effected during the past two decades. Many of them have operated successfully with benefit both to the members of the group and to the individuals that have applied to them for medical service. It should be borne in mind, however, that these groups have in most part been the results of a natural growth and in response to some definite local need. They have usually been organized around some strong central figure that provided leadership or have been developed as a part of a highly centralized business enterprise. It is now proposed that the group idea be undertaken on a national scale and that the practice be largely carried on by such groups.

We may well ask ourselves certain questions when considering such a radical change in our present method. Will there be a real economy in operating in this way and will this economy be passed on to the consumer in the form of less cost for medical service? Will there be a loss of that personal relationship between physician and patient that is now such an important element in individual practice? Will there be a loss of initiative on the part of the individual members of the group and will there be weakening of incentive to advancement? Will there be danger of lay control of these medical centers and, if so, does this carry potential dangers? Will destriuctive competition arise between these groups, unrestrained by our present system of ethics? Will the advancement of medical science be encouraged or depressed?

There are certain economies that immediately sug-

gest themselves to us in this arrangement. The consolidation of office, laboratory and general business expenses would obviously effect a very definite saving. Certain professional advantages would flow from the close association with other physicians, if the group were formed on a basis of harmony of interest and mutual respect. This has often been the case when a group has been organized by a leader in the profession in response to local needs. This, however, is quite different from the proposal to form groups all over the country in such numbers as to largely meet the medical needs of the people.

Leadership will often be lacking, and conflicting interests of the different members will prevent harmony. When one or more such groups undertake to supply service to a community, provisions must be made for the maximal and not the average needs. In normal times, this would tend to the formation of an over-staffed organization and to excessive cost. It is to be remembered also that about 80 per cent of illnesses for which patients consult physicians are of such a nature that they may be cared for without the elaborate equipment and organization necessary in such a group. Only about 20 per cent of the sick require the type of service that can be economically offered by a group. It is a serious question, whether there would, in the long run, be any economy in national group practice.

That there would be a loss of personal relationship between physician and the patient can hardly be doubted. The sick man will become the patient of the group, and personal responsibility to him as an individual will be so dispersed as to become intangible. He may for a while get more systematic professional care, but he will certainly get less understanding. The practice of medicine is an individual matter and is not capable of organization beyond a certain point without a loss that outweighs the gains.

Under the arrangement proposed, physicians are to be put on a salary basis and thus relieved of all worry and concern as to income. It is contended that this will enable them to devote all of their time to the practice of their profession. It will be inevitable under these conditions that, actually, control will pass to lay hands with more or less standardized regulations concerning salary and promotion. This lay control would certainly extend itself into the purely professional field, also through their control of appointment, salary and promotion. Such an organization, with a considerable capital investment and a fairly high fixed overhead, would be subject to the hazard of business failures in times of depression even if subsidized by funds derived from taxation. The more complete such an organization became the more would individual enterprise and initiative be destroyed. The mediocre man would tend to advance as rapidly as the man of real ability. The physician would become a mere job holder deprived entirely of all independence. The quality of medical service under these conditions would suffer progressive deterioration. Routine would replace individual initiative and thought. It is unthinkable that the science of medicine could advance under such uncongenial environments.

These criticisms do not apply, of course, to groups that have come together in response to actual needs or as a part of an industrial service in certain communities, nor the development of unified plans by a County Medical Society; but do pertain to any scheme that involves the general organization of the medical profession in so-called medical centers, under the proposals by the Committee in its first recommendation.

The argument for some form of group payment is based on the contention that the cost of medical care is such a variable factor with individual families from year to year, and among different population groups at all times, that it is impossible for the average person to make provisions to meet it. As a matter of fact, many individuals do make such provisions, by means of saving for the inevitable rainy day, or by personally carrying some form of insurance against the cost of illness. It seems eminently unfair to set up the cost of extraordinary illness in one year against the family income for that year as an example of the evils of our present system. The particular family that has suffered excessive expense in oue year may have had no illness of consequence for a ten-year period preceding this. While the exact time that illness will occur cannot be determined, the fact that it will occur can certainly be predicted. Among the thoughtful and thrifty it has long been the custom to make provision for this contingency. There is no form of organization that will take the place of individual initiative and thrift. Anything that tends to discourage the development of habits of self-dependence and to place the burden on the government or some other organization should be opposed.

There is a large population group without income, or with income so small that even with the exercise of thrift it is unable to pay for the cost of adequate medical care. Some provision is already made for them through free service or a lowered charge adjusted to their ability to pay. In estimating the cost of medical service to the lower income group, apparently no cognizauce was taken of the amount or cost of the free service rendered. It would seem possible to take care of this group by an extension of our present facilities, providing the actual cost of their care, not including remuneration of physician, be met by taxation. At present, many localities are not making adequate provision for the care of their indigents. The burden thus falls upon the hospitals and clinics and, indirectly, upon the patients that pay their way. The most reasonable and practical way of equalizing, to a considerable degree, the cost of medical care, would be to relieve these individuals of the burden of supporting the free work of the hospitals and to raise the funds for this work by taxation.

In considering group payment there seems to be no half-way station between our present situation and compulsory health insurance, including all population groups. Voluntary health insurance is open to many objections, set forth in both the Majority and Minority Reports. It is also open to all of the objections raised against a national system of group practice, since the insurance association must necessarily enter into contract with a group of physicians to provide medical service at a certain figure to their members. Where it has been tried out, serious evils have developed, such as solicitation of patients and deterioration in the quality of service rendered. The most serious objectiou, however, is pointed out in the Majority Report, namely, that it would not reach the great group of poorly paid workers of income less than twelve hundred per year. Once we embark on any widespread scheme of voluntary health insurance, progress to compulsory insurance is inevitable. The case must rest then on the advisability of adopting a general scheme of compulsory health insurance.

It is impossible to discuss briefly all the implications of compulsory health insurance. These have been set forth in many articles and reports on the subject both here and abroad. It might be well to point out that it would lead to absolute government control of the practice of medicine, with the

creation of many bureaus, with large non-professional administration cost. Experience in the European countries that have put it into practice indicates that the duration of illnesses has practically doubled. These two factors alone would probably wipe out any economy that might otherwise be effected. By far, however, the most important objection lies in the depressing effect of such a system on the quality of medical care rendered, and on the progress of the science of medicine.

However, the so-called Milwaukee plan of health insurance might be tried in communities in which it seems applicable. In Milwaukee the health insurance is conducted under the auspices of the county medical society. A patient pays for this insurance and can receive the services of any members of the county medical society in good standing whom he cares to select. The fees for the insured patient are paid by the insurance organization—a non-profit organization formed under the auspices of the county medical society. In order to prevent imposition, it would probably be wise to require that the patient pay 10 per cent of the costs in addition to the amount received by insurance. There might also be additional provisions for unusual cases that are quite expensive. It would seem wise to limit the insurance to families in the low income brackets, say, those receiving not more than $1,500.00 a year.

Such a plan as suggested appears to offer the possibilities of benefit to both the medical profession and the patient, and while it is well recognized that it is not applicable in all communities, it is worthy of a trial under certain conditions.

We approve of Recommendation 2 of the Majority Report, that all basic public health services be extended so that they will be available to the entire population according to its needs.

We also approve of Recommendation 1 of the Minority Report, that government competition in the practice of medicine be discontinued and that the activities of the government be restricted (a) to the care of the indigent and of those patients with diseases which can be cared for only in governmental institutions; (b) to the promotion of public health; (c) to the support of the medical departments of the army, the navy, the coast and geodetic surveys, and of other government services which, because of their nature or location, cannot be served by the general medical profession; and (d) to the care of veterans suffering from service-connected disabilities and diseases.

We further approve of Recommendation 2 of the Minority, that government care of the indigent be extended, except that we do not believe that, as a general policy, this should include payment to physicians for their services unless they are employed in institutions on a full-time basis.

We believe there can be little objection to the extension of the public health service, whether national, state or local, to meet the legitimate needs of preventive medicine. We think it is equally clear that the invasion of the field of private practice by any of these governmental agencies is objectionable. The provision for the care of veterans suffering from non-service-connected disabilities, and of civil employees of the government and their families, not only adds greatly to our tax burden but brings the government directly into competition with existing private agencies; furthermore, the expenditure by the federal government of huge sums for the construction of new hospitals, when there is already an over-supply of hospital beds, is wasteful and works a great hardship on voluntary hospitals now operating. This very directly adds to the cost of hospital care of patients at these hospitals. We believe that patients entitled to hospital care by the federal government should be hospitalized, as far as possible, in the existing institutions of recognized standards of efficiency, and that the federal hospital building program should be sharply curtailed.

The care of the indigent is a local problem and should be met by each community. The cost of hospitalizing these cases should be borne by the whole community, by means of taxation. It seems probable that this can most economically be done by paying for the care of these patients on a per diem basis in regular general hospitals, accessible to each community, rather than by building and operating municipal hospitals. We do not believe, in general, that physicians should be paid for the care of these patients, but that the regular staff of each hospital should care for them, without charge.

Recommendations 4 of the Majority Report and 3 of the Minority agree in declaring that the study, evaluation and coordination of medical service be considered important functions of every state and local community, and that agencies be formed to exercise these functions, and that especial attention be paid to the coordination of rural and urban service. This seems to us one of the most important recommendations made by either committee. The problem of medical costs is essentially a local one and should be worked out by each community. It is not reasonable that any general scheme of organization can be devised that would be equally applicable to the varied needs of industrial and agricultural groups, with their marked differences in density and character of population and in general standards and costs of living. We recommend that this Society move to form a group made up of representatives of the medical societies, the dental, nursing and pharmaceutical associations, the hospital boards, and the various civic societies, to study the question of our local needs and to coordinate and improve our existing medical agencies for the care of the indigent.

Recommendation 5 of the Majority Report seems to us to be of primary importance and can be accepted with little controversy. We would especially emphasize the importance of training general practitioners in the accepted diagnostic procedures. Only through this means can the evils of specialization be combated. The family doctor has a wide and useful field, if, through ineptness and indifference, he does not abandon it to the specialists. Specialties should be restricted to those who are particularly qualified. Greater care should be taken in the selection of prospective medical students. We think that this should not only include the academic requirements, but a careful psychological examination in an effort to explore the prospective student's ideals and fundamental character, to find what his attitude is toward society, and his objects in adopting the practice of medicine. These should be carefully gone into before he is admitted to a medical college, and the character of the individual and his integrity should be emphasized even more than his educational requirements.

It might be pointed out that in the field of public health work the principal need is, not for more and better health officers, so much as it is for a better opportunity for those we already have. The advance must be made in the direction of freeing the public health service from political influence and of providing workers in this field with security as to income and tenure of office. The facilities for the training of public health workers seem sufficient, but the real need is to make this work attractive to men of the first order.

### Summary

1. We oppose the Recommendation 1 of the Majority Report, in so far as it applies to the general organization of the medical profession in groups that will largely carry on the practice of medicine. We do not, however, oppose the formation of groups in response to definite local needs, or as a part of an industrial service in certain communities, nor the development of unified plans by a County Medical Society.

2. We approve of the legitimate expansion of public health services—national, state ond local—to meet adequately the needs of preventive medicine for all of the people.

3. We oppose the invasion of the field of private practice by any governmental agency, and particularly point out, as an example of this, the provision of medical care for veterans for non-service-connected disabilities, and the building of new hospitals by the government while there already exist an excess of hospital beds.

4. We favor the provision of proper hospital care for the indigent by each community, through its local government, so as to relieve the voluntary hospitals of this burden.

5. We oppose the adoption of any general scheme of group payment for medical care, and, especially, a policy of national health insurance. We recognize that in certain communities local needs may be met by certain forms of group payment, adapted to the conditions in the particular community.

6. We favor formation of local groups, made up of representatives of lay and professional organizations, to study, coordinate and extend medical service in each community, as related to the care of the indigent.

7. We concur in Recommendation 5 of the Minority group, opposing the corporate practice of medicine financed through intermediary agencies.

8. We concur in Recommendation 5 of the Majority Report, in reference to professional education.

J. Shelton Horsley,
Walter B. Martin,
Herbert C. Jones,
I. C. Harrison,
M. B. Hiden,
Alex. F. Robertson, Jr., *Chairman.*

### Report of Committee on Military Affairs and National Defense*

The Committee on Military Affairs and National Defense heartily approves President Roosevelt's stand for a first-class Navy and adequate Army and appeals to all physicians of Virginia to assist in preventing the United States from participating in another war by being prepared for emergencies. The committee also urges that we maintain a well organized Medical Reserve Corps in Virginia.

H Fitzhugh White, *Chairman.*

*The full report of this Committee was lost in transit to members of the Committee. Dr. White has given the substance of his report.

### Report of Committee on Tuberculosis Clinics

It is my privilege to report for the Committee on Tuberculosis Clinics of the State Society, composed of Dr. H. A. Latane, Dr. S. E. Hughes, Dr. W. E. Brown, Dr. M. B. Jarman and Dr. Dean B. Cole.

In August, 1932, Dr. Warren F. Draper, State Health Commissioner, appointed the following Advisory Committee on Tuberculosis: Dr. George B. Lawson, Dr. Dean B. Cole, Dr. C. L. Harrell, Dr. E. C. Harper, and the three Medical Directors of the State Tuberculosis Sanatoria, Dr. J. B. Nicholls, Dr. W. E. Brown, and Dr. J. B. Woodson. The purpose of this committee is to consider programs and policies of the State Department of Health, and to suggest and advise as to procedures to be instituted in conducting tuberculosis control in Virginia. It was proposed that this committee should meet at least twice a year, and the first meeting was held on September 9, 1932.

The State Department of Health has endeavored to make available tuberculosis out-patient service in every county of the state, but due to limited personnel, this has been found impossible of accomplishment. However, through the diagnostic and clinic service, chest clinics were held in eleven cities and eighty-seven of the 100 counties. The very definite policy of having patients admitted to clinics only on an appointment basis and with a written request from the physician has been rigidly adhered to, this having applied not only to chest clinics, but to X-ray clinics as well. Re-examination has been definitely discouraged, except in those patients where the clinician or the physician has requested that re-examination be made.

Dr. I. C. Riggin, Director of County Health, has kindly reported the clinical activities conducted by the Tuberculosis Out-Patient Service of the Virginia Department of Health, and for your information, I am summarizing this very briefly.

| | |
|---|---|
| Total chest clinic days | 223 days for the year |
| Total chest examinations | 8,364 |
| Total number X-rayed | 1,664 |
| Children tuberculin tested | 2,483 |
| Total positive tuberculosis cases | 1,925 |
| Total suspicious cases found | 1,097 |
| Total examinations for negative tuberculosis | 4,977 |
| Total inconclusive found | 300 |

Dean B. Cole, *Chairman.*

### Report of Committee on Mental Hygiene of the Medical Society of Virginia

1. The committee recommends that the Society continue to endorse the work and educational programme of the State Bureau of Mental Hygiene and that the expansion of this work be made possible by sponsoring adequate appropriation.

2. We recommend that the feebleminded should not be sent to reformatories and that more adequate provision should be made for these cases, especially the colored.

3. The committee feels that separate institutional care should be provided for mentally disturbed children. We also recommend the establishment of an observation ward for mental cases at each of the State Medical Schools.

4. We further recommend that a committee be appointed by the president to continue the study of Mental Hygiene in accordance with a previous resolution.

James H. Royster, M. D.,
David C. Wilson, M. D.,
James King, M. D.,
Frank H. Redwood, M. D., *Chairman.*

### Report of the Advisory Committee to the Woman's Auxiliary

The Advisory Committee to the Woman's Auxiliary to the Medical Society of Virginia respectfully reports that few controversial matters requiring the advice of this Committee have arisen. We are pleased to report that several new Auxiliaries have been organized under the enthusiastic leadership of Mrs. William Lett Harris, State President.

They have secured many subscriptions to *Hygeia* and cooperate with the Advisory Committee and with other organizations in promoting all health measures in their various communities. They have been especially active in work for the crippled children

and in pre-school examinations. They realize that to have healthy children, the mothers must be educated in health matters, and to this end, many of the Auxiliaries are putting on courses of lectures concerning sanitation in the home, food, etc.

The women are not only the best interpreters of the profession's motives and accomplishments but are real helpers in any medical work in which they are asked to participate.

All social matters for Conventions, etc., are given over to the management of the Auxiliaries.

We believe that this bringing of the doctor's families into closer touch makes for friendship and a better understanding between the doctors themselves.

Once again the Committee desires to commend the work of the Auxiliary to the profession.

J. Allison Hodges, *Chairman.*

### Report of Committee to Make Inquiry as to Effect of Using Iodized Salt

Report of the committee composed of Dr. Nicholas G. Wilson, Dr. H. B. Mulholland and Dr. Wm. H. Higgins, on "The Relation of Iodine with Special Reference to Iodized Salt to the Incidence of Simple Goitre":

Following the report of this committee at the last session of the House of Delegates on the relation of iodized salt to the incidence of simple goitre, it was thought advisable to collect data on the incidence ot the use of iodized salt by patients who subsequently developed toxic adenomata. A selected list of twenty-eight hospitals was supplied with inquiry blanks with reference to this point. This data is now being collected but no report will be made until a sufficient number of cases has been obtained for an analysis.

Nicholas G. Wilson,
H. B. Mulholland,
Wm. H. Higgins, *Chairman.*

### Report of Committee to Administer Trust Fund for Post-Graduate Clinical Education

We can only duplicate the report of last year. There is no trust fund at present, and under the economic conditions that now exist the committee does not believe it would be wise to attempt to solicit funds at present. You will recall that the former report was substantially this.

J. Shelton Horsley.

### Reports of Delegates to the American Medical Association

*Dr. Draper's Report.*

As a delegate of the Medical Society of Virginia to the meeting of the American Medical Association in Milwaukee, Wis., June 12th to 16th, I have the honor to submit the following report:

I served as chairman of the Committee on Hygiene and Public Health. The following is a summary of the resolutions which were referred to this Committee and the action taken:

1. A resolution that the Board of Trustees pursue activities and efforts to terminate misleading and misrepresenting radio broadcasting that is related to medicinal remedies and preparations, and also foods. The resolution was adopted by the House of Delegates.

2. A resolution that the House of Delegates create a special committee to study the problem of birth control with special reference to methods of contraception and the best manner of imparting instruction to physicians and the lay public. It was the intention that this committee should report its findings to the House of Delegates at the 1934 session in order that that body might have authentic information upon which to base its future policies regarding birth control. The resolution was tabled by action of the House of Delegates.

3. A resolution recommending the endorsement by the House of Delegates of the work of the Division of Vital Statistics of the Federal Bureau of the Census and recommending also that the members of the Association interest themselves in the valuable work of the Division of Vital Statistics as related to the medical profession and that they render their assistance either as members of county, state, or other organizations, or as individuals. The resolution was adopted

4. A resolution that the House of Delegates urge on constituent state associations the annual observation of a State Health Day to be marked throughout each county of each State by the coordinating leadership of the component medical society. The resolution was not adopted because it was felt that because of the multiplicity of present-day observations already in effect the designation of a State Heath Day would not be of particular advantage.

Detailed information in regard to the above resolutions may be found in the June 24th and July 1st numbers of the *Journal of the American Medical Association.*

In addition to the foregoing, certain resolutions which may be of particular interest to the Society are summarized as follows:

1. A resolution introduced by Dr. Kopetsky, of New York, pertaining to the adoption of a national and uniform standard by which specialists may be known and recognized by their fellows in the profession. This resolution, as amended and passed, provided that the Council on Medical Education and Hospitals is authorized to express its approval of such special examining boards as conform to the standards of administration formulated by the Council and that the Board of Trustees be urged to use the machinery of the Association in furthering the work of such examining boards as may be accredited by the Council.

2. A resolution endorsing the Minority Report of the Committee on the Cost of Medical Care as expressive in principle of the collective opinion of the medical profession. This resolution was adopted.

Dr. Walter L. Bierring, of Des Moines, was chosen President-Elect, Dr. F. C. Warnshuis was re-elected Speaker of the House of Delegates, and Cleveland, Ohio, will be the place of the next annual meeting.

Warren F. Draper.

*Dr. Smith's Report.*

Because of the fact that a detailed report of the Proceedings of the Milwaukee Sessions of the American Medical Association has been published in the June 12, 1933, and July 1, 1933, issues of the *Journal of the American Medical Association*, it seems to me unnecessary to make an extensive report as a delegate from this Society. However, there are a few subjects worth emphasizing.

A deep impression is made on one having for the first time the experience of attending the sessions of the House of Delegates of the American Medical Association by the efficiency, personality and seriousness of purpose of the officers. Dr. F. C. Warnshuis, speaker, and Dr. Olin West, secretary, are real medical statesmen.

Two suggestions in regard to medical education are of significance, first that the Council on Medical

Education and Hospitals is directed to make "A Study of Matriculates and Graduates for the Purpose of Determining Annual Quotas of Admission of Students"; second to devise "A Plan and Procedure for the Certification of Specialists in all Branches of Medicine and Surgery."

The House of Delegates passed a resolution endorsing the minority report of the committee on the costs of medical care. A great deal of attention was devoted to medical legislation and medical economics. In general the remarks and action were very conservative, well thought out both as to the present and the future and stimulated by unselfish ideals.

The scientific exhibits were as a whole of a very high order. The general program including the section meetings seem to be up to the usual standards despite the financial condition of the country. As stated by one of the speakers, there does not seem to be a depression of mental activity, scientific research and practical application in the fields of medical knowledge.

D. C Smith.

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*Dr. Leigh's Report.*

The plan of having each delegate make an individual report is being tried for the first time and gives me an opportunity of saying a word in regard to one of our delegates.

Dr. Draper, who has previously been a member of the House of Delegates for several years, representing the Public Health service, stands very high in the estimation of the officers and delegates. His opinion and advice on weighty matters is always in demand. He is not only an authority in matters of public health, but he is a firm believer in medical organization and does much (as his former Chief has notably done at all times), to zealously guard the interests of the profession.

In addition to the reports submitted by Drs. Smith and Draper, I would call attention to the following:

1 Blindness in the newborn:
Steps taken to coordinate the efforts of this and other organizations to arrange for the detection and treatment of syphilis in pregnant women.

2. Psychiatric service for courts:
Constituent and component societies urged to hold at least one meeting annually for discussion of this matter with the local bar.

3. Narcotic control:
Proposed uniform State Act urged for adoption.

4. Practice of medicine by Corporations:
Attention of State Societies called to this pernicious and illegal practice.

5. Council on Physical Therapy commended for its work in showing the values and dangers attending the use of apparatus by untrained people, together with exposing deceptive advertising and high pressure salesmanship.

6. Proposed resolution:
The undersigned introduced a resolution at the previous meeting providing that presidents of State Societies be ex-officio members of the House of Delegates.
The Committee on Constitution and By-Laws warmly approved the purpose of the resolution, which was that a very definite and direct connection between the A M. A. and its constituent State Association be thus effected, but felt obliged to report against the resolution on account of making the House too unweildy.

7. Army Medical Library and Museum:
The government was urged to erect new buildings for this institution, now the largest medical library in the world and most essential for the profession.

8. President Cary:
The Speaker, in introducing Dr. Cary, spoke in part as follows:
"He has made a contribution that I do not believe has ever been equaled by a President of this Association. During his term of office he has traveled 99,190 miles on official business. He has been away from his home over 340 days, almost an entire year, in keeping eighty engagements in which he was the Association's official representative—a wonderful record of faithful service."

The most outstanding matter considered by the House was the problem of the veterans.

At previous sessions, in considering the unwise action of Congress in providing medical and hospital care for all veterans regardless of the nature and cause of their disabilities, vigorous action had been taken to prove the unwisdom of this legislation both in the interest of the veterans, the taxpayers and the profession.

The situation was a most serious one, constituting a forward step in "State Medicine."

The action of President Roosevelt has met with the approval of the public, but vigorous and organized steps are being taken by the veterans to persuade Congress to radically change the law.

The subject is of such vital importance that I deem it best to quote statements of officers and committees, so that the profession of Virginia may be properly informed:

(a) President Cary:

"Your legislative committee had labored earnestly to meet the issue raised by the ever growing service to veterans, which is the result of legislation in their interest. The question of hospitalization has been a serious one and, though there has been no desire to prevent the most liberal care on the part of the government for the service-connected disabilities due to the war, we have strenuously objected to the liberalization of laws which permit the man who is able to pay for medical service to enter veterans' hospitals for free medical care. We have objected to more hospitals being built unless they are needed to care for those suffering with tuberculosis or with mental and nervous disorders, or unless they are needed as old soldiers' homes."

"Following the adoption of the economy program of the President as to veterans' gratuities, an order was issued to the medical officers of the veterans' hospitals by General Hines, humane in tenor, stating that only those who were well or those who could be properly discharged from the hospitals be sent home. This order has resulted in about fifteen thousand patients being dismissed up to June 3, 1933. This is reflected in the cancellation of certain contracts with the army and navy and in the reduction of personnel, physicians, nurses and other help, in many of the hospitals which remain open. There has been an effort made to reduce the occupancy of all beds heretofore used by the non-service-connected disabled soldier and, when this point has been reached, the future use of the beds will come from a very numerous group of service-connected cases, many of which are now being cared for at home. In other words, the department intends to keep the present beds, totalling 41,000, in veterans' hospital service. The rebellion of the Senate and House, forcing a compromise, may reopen many phases of the question.

"We must not lose sight of the fact that the present program is also the result of a depleted treasury and, if the economic situation of the country should improve before the present policy is well established,

the demands of the veterans having non-service-connected disabilities may reestablish abuses of governmental aid to which we have objected. Hence, it is necessary for members of our profession to continue their opposition; otherwise, we shall be confronted with the same situation as it existed before Congress gave its support to the request of the courageous President of our country."

(b) President-elect Lewis:

"One of the main problems which had a decided effect on the profession was the extensive hospitalization program which the government embarked on immediately following the war. The legislation that was passed is of such recent date that it is not necessary to review it. Non-service-connected disabilities entered largely into the program, so that finally almost 70 per cent of the cases that were hospitalized presented disabilities which had nothing to do with the service and did not even have a presumptive connection. Ochronosis, acidosis, gout and obesity, were even on the list of diseases and were applied in the rating of disabilities. In the economy program that has been attempted, non-service-connected disabilities were excluded. Recent happenings indicate that much pressure has been brought to bear and that hospitalization of non-service-connected disabilities may again be attempted. If the bars are let down there will gradually be an increase in the amount of hospitalization and a return to the conditions which existed before the attempt to economize was made."

"Continued effort should be maintained to prevent a return to the system which prevailed before the economy act was considered. Personal contact with legislators is about the only method we have to prevent the continuation of a scheme which will bankrupt a government, and, if bankrupt, even the non-service-connected disabilities will have nothing. We will all be in the same boat, which is disabled and tossed about."

(c) Legislative Committee:

"To conclude the discussion on veterans' affairs, it is our opinion that the American Medical Association should support the President of the United States in his exercise of the authority that has been conferred on him. The Congress has granted him authority to determine the nation's policy in regard to veterans. He has acted courageously, according to his best judgment If events prove that he has made an error of judgment, he will, we believe, promptly correct that error on his own initiative. Your committee deplores the attempts that have been and are being made to deprive the President of the authority that has been granted to him.

"We believe that it is the duty of the government to provide medical and hospital service at government expense for the relief and cure of such disabilities of veterans as are of service origin. This service could be rendered in government hospitals and homes, or elsewhere, in whatever manner is of the greatest benefit to the disabled veterans. The President has promised such care to veterans of this class. We believe further that care of this type should be provided at government expense for veterans disabled by neuropsychiatric and tuberculous disorders and for veterans totally disabled by other chronic diseases, and by injuries, when those veterans are unable to provide for themselves."

Resolution adopted:

"*Resolved*, that the American Medical Association commends the efforts of the President to preserve to all veterans suffering from service-connected disabilities all medical and hospital benefits necessary to their relief; and

*Resolved*, that the Association commends, too, the action of the President looking toward a reduction in medical and hospital benefits for veterans who are without service connected disabilities, so that the cost of the benefits provided, if any, will be reasonable, and equitable to the taxpayer as well as to the veteran; and further

*Resolved*, that copies of these resolutions be sent immediately to the President, the Vice-President, the Speaker of the House of Representatives, the Director of the Budget, and the Director of the Veterans' Administration."

Dr. Cary has been made Chairman of the Legislative Committee and is making strenuous efforts to enlist the aid of every State Association, every county society, and their women's auxiliaries. A copy of a letter from him is being sent to the officers of this society and those delegates whose names have been reported.

I would urge that the Society take appropriate action.

SOUTHGATE LEIGH.

# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council of Pharmacy and Chemistry of the American Medical Association:

U. S. Standard Products Company

Antimeningococcic Serum Polyvalent, 30 c.c. vial package.

Diphtheria Toxin-Antitoxin Mixture, 0 1 L+, 10 c.c. vial package.

Rabies Vaccine—U. S. S. P. (Semple Method), 7 syringe packages.

Rabies Vaccine—U. S. S. P. (Semple Method), 14 vial packages.

## Propaganda for Reform

Some Effects of Overdosage with Viosterol.—Not long after the introduction of viosterol, tests made on experimental animals, with large doses demonstrated that under certain conditions it can give rise to harm. Before long, however, it was learned that the range between therapeutic and toxic doses is large, so that the danger of overdosage now seems rather remote. Only when the intake of viosterol solutions exceeds the established medicinal dose a thousand times, or by some excess of that approximate magnitude, do the symptoms of disorder clearly manifest themselves. Medicine should welcome every new study of viosterol, particularly in view of the increasing tendency to fortify many common foods, such as milk and bread, with vitamin D. In recent studies by Reed and his co-worker at the University of Illinois College of Medicine, a significant increase in the resting, post-absorptive metabolic rate in animals has been observed following administration of large doses of viosterol. This stimulation of the metabolic rate has been difficult to explain, as it has not yet been quantitatively related to any other observed factor. Hypercalcification has been observed by many investigators. Recent researches indicate that the magnitude of the increase in calcium content is not correlated with the dosage, but seems to depend on some undetermined individual factors. It was found that the phosphorus content, while widely variable among individual animals, was affected by the administration of viosterol in a much less constant manner, if at all. According to these studies the significance of deposition of calcium in the tissues cannot be evaluated at present. (Jour. A. M. A., August 26, 1933, p. 714.)

# Lynchburg, Virginia—Our Convention City

*Lynchburg and Williams Viaduct from Amherst side*

*Original unit, Virginia Baptist Hospital*

*Monument Terrace with World War monument*

Just three years hence Lynchburg, Va., will celebrate its one hundred and fiftieth birthday. Her citizens then can look back on a century and a half of solid, substantial progress. Nothing in the history of the city indicates any growth of the "mush-room" variety. Sporadic booms have occurred but in the main the development of the city has been along well ordered lines. This in measure accounts for the present-day strength and importance of the city as a financial, industrial and commercial center.

It is a long cry from the establishment of Lynch's Ferry to the present-day industrial position of the city. The development of Lynchburg is analogous to the development of the State. Lynchburg can be regarded as a typical city of Virginia—rich in tradition and historic interest in which the Old Dominion abounds, yet sharing full measure in the progressive development of the new Virginia.

For the first hundred years of its existence trade and business in Lynchburg centered around the growing, marketing and manufacturing of dark tobacco. Dating from the last decade in the nineteenth century when the tobacco industry was practically eliminated from the life of the city, has arisen the modern industrial Lynchburg. The modern city, with its numerous and diversified industries owes its importance to the activities of its citizens during only the past forty years.

It is a rather remarkable fact that practically all of the leading industries of this city were created and financed entirely by Lynchburg men and capital. From a small beginning during this period there has arisen the huge Craddock-Terry Shoe Company, which is today the largest concern of its kind in the south manufacturing shoes. Over three thousand workmen alone are employed by this company. During this same period the largest wagon factory in the south has grown, and also the largest plant of its kind in the country devoted entirely to the manufacture of tanning extract. A modern touch has been given to this extract

plant by the addition in the past two or three years of a huge paper mill, which utilizes the waste of the extract manufacture in the production of its output. Two large pipe foundries located here with their combined output make Lynchburg rank second only to Birmingham in the south as a foundry and pipe center. With a large labor supply skilled in needle and stitching work, it has been only natural to see many garment manufacturing concerns thrive here. Hoisery mills, textile mills, candy manufacturing plants, drugs and many other lines of industries all testify to the many advantages of this city as a growing and thriving industrial center.

It is rather singular to note that during the past three years of the economic depression the stability of Lynchburg industry has been put to its greatest test and has come through with colors flying. Only one or two plants have closed down for any length of time and only a handful have been working on consistently reduced schedules. The balance have kept operating at a most satisfactory capacity with the result that industrial unemployment in Lynchburg has been held to a minimum. In comparison with situations existing in other industrial centers in this section of the country, Lynchburg has fared unusually well. Always noted as a strong financial center, all of the banks in the city have weathered the storm in splendid fashion and their strength has never been so forcibly shown. There have been fewer business failures in Lynchburg during the past three years than in most cities of corresponding size.

While no attempt is being made to disguise real conditions and Lynchburg has suffered and is suffering from the depression, yet it is not mere boasting to state that conditions in Lynchburg have not been as severe as in other neighboring cities. Perhaps the background of the city accounts for this. Generations of conservative and sound business practices are behind the modern Lynchburg business men and this, coupled with their "keep-your-chin-up" attitude have made them carry on where others may have faltered.

In the same manner that Lynchburg has thrived industrially, she has developed her wholesale and retail trade. Her splendid strategic location and unequalled distributing facilities have caused her jobbing houses in many lines to flourish. Their territory is the whole south and parts of the middle west. In shoes, dry goods and notions, drugs, crockery, clothes, confections and in numerous other lines, Lynchburg's jobbing trade has given the city an enviable position.

Being the largest city in the Piedmont section, Lynchburg has naturally grown in importance as a retail trade center. Retail trade territory for a long time was limited, owing to the city's isolation as regards roads and highways. Rapid strides in this line over the past ten years, however, have eliminated this obstacle. Today hard surfaced roads radiate in every direction from the city and consequently trade territory has been greatly increased. Large department stores and attractive Main Street retail houses lend an air to the city comparable with cities of many times the population of Lynchburg.

Lynchburg's importance does not lie entirely on the material and commercial side, for it has developed strongly as an educational center. Randolph-Macon Womans College, Sweet Briar College for Women, Lynchburg College, a coeducational institution, and Virginia Episcopal School for Boys, attract annually over two thousand students to the city. In addition to these colleges and preparatory schools, the city possesses an unusually splendid public school system which cares for the needs of over eight thousand school children.

Commensurate with the size of the city, recreation facilities in abundance are provided.

Visitors to the city are impressed at once with its beautiful setting and with the gorgeous views on all sides. The highway known as U. S. No. 60 between Lynchburg and Natural Bridge, offers over its stretch of forty odd miles as fine scenic vistas as can be obtained in America. Located also on the famed Piedmont Highway (U. S. No. 29), Lynchburg has become even more accessible to those who journey through the Old Dominion enjoying its wealth of scenic and historic attractions.

Lynchburg is taking an active part in the organization and development of the Piedmont Highway Association, which is boosting travel over U. S. No. 29 from Washington through Charlottesville, Lynchburg and to the south. This highway is called the "Main Street of the South" and in a short time will be recognized as a most important artery through the State. Tourists visiting Lynchburg will find much to interest them. Nearby is Natural

Bridge, famed world wonder, the Surrender Grounds at Appomattox, Poplar Forest, built and occupied by Thomas Jefferson, the Elks' National Home at Bedford, Timber Lake, largest inland lake in the State and an ideal summer resort, and many others. Nearby is the Natural Bridge Forest area, ideal for camping and fishing. Lynchburg is also in close proximity to the southern outlet of the Shenandoah National Park and motorists leaving this Park will travel over a beautiful scenic drive to reach the city.

Visitors are at once impressed with the delightful hospitality of Lynchburg. Her people are her greatest asset—they abound in pride of the glorious record of her past and they contemplate the future with an assurance that Lynchburg will move steadily ahead and at all times keep her position in the front ranks of Virginia cities.

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka Street, Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Avenue, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 South Market Street, Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Avenue, Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Avenue, Richmond.

**To the Members of the Woman's Auxiliary to the Medical Society of Virginia:**

It is my pleasure as your President to issue the Official Call for the Eleventh Annual Convention of the Woman's Auxiliary to the Medical Society of Virginia, to be held October 24th, 25th, 26th, in Lynchburg. Headquarters will be at the Y.W.C.A. building.

I urge all members of the Auxiliary to attend this convention. It is your duty to make an effort to be present. An invitation to attend the meetings is extended to all women attending the convention whether they are members of the Auxiliary or not. The business sessions promise to be very interesting and helpful for the future development and expansion of the Auxiliary in Virginia. Our entertainment arranged by the hostess committee promises to be most enjoyable.

I look forward to seeing you all at Lynchburg in October.

Mrs. William Lett Harris,
*President.*

**An Invitation to the Lynchburg Meeting.**

When the Virginia Medical Monthly goes to press, we, the doctors' wives of Lynchburg, want it to carry an invitation to every doctor's wife to be present at the Medical Society meeting, October 24th, 25th, and 26th.

Lynchburg is centrally located with good roads in all directions and several railroads and is of easy access.

Our plans are made for your entertainment and we are looking forward with great pleasure to your coming.

You have often promised yourself to attend the Medical Society meeting and here is your chance, so say to your husband:

"And I to my pledged word am true,
I shall not fail that rendez-vous."

And now, dear Doctor, be sure that at least this copy of the Virginia Medical Monthly is carried home for the perusal of your wife. We thank you!

Mrs. Geogre J. Tompkins, *Chairman.*
Mrs. R. D. Caldwell
Mrs. B. H. Kyle
Mrs. P. G. Dillard
Mrs. J. T. T. Hundley, Jr.
Mrs. F. O. Plunkett.

**PROGRAM**
**ELEVENTH ANNUAL MEETING**
**Lynchburg, Virginia**
**October 24-26, 1933**
**Headquarters, Y. W. C. A. Building**
**Tuesday, October 24th**

Registration, 5:00 to 8:00 P. M., at Virginian Hotel. Every woman is requested to register immediately upon arrival.

8:00 P. M.—Opening Meeting of the Medical Society of Virginia, at Knights of Columbus Hall.

**Wednesday, October 25th**

9:00 A. M.—Registration Booth open.
9:00 A.M. to 6:00 P. M.—Question Box open.
9:00-10:00 A. M.—Pre-Convention Board Meeting.
(All County Presidents, State Officers and Chairmen are urged to be present.)
10:30 A. M. to 12:30 P. M.—Opening Session, General Meeting. Mrs. William Lett Harris, President, presiding.
Invocation—Rev. Richard Henry Lee, Rector of Grace Memorial Church.
Address of Welcome—Mrs. George J. Tompkins, Lynchburg.
Response—Mrs. Joseph T. Buxton, Newport News.
Minutes of Tenth Annual Meeting—Mrs.

Fletcher J. Wright, Sec'y, Petersburg.
Report of Treasurer—Mrs. Reuben F. Simms, Richmond.
Report of Corresponding Secretary—Mrs. Charles A. Saunders, Norfolk.
Reports of Committees:
Arrangements.
Credentials.
Report of State Chairmen:
Organization—Mrs. Joseph Bear, Richmond.
Program and Health—Mrs. Southgate Leigh, Norfolk.
Finance—Mrs. James K. Hall, Richmond
Legislation—Mrs. T. W. Murrell, Richmond.
Public Relations—Mrs. W. F. Drewry, Richmond.
Hygeia—Mrs. C. Lydon Harrell, Norfolk.
Revisions—Mrs. Eugene L. Lowenberg, Norfolk.
Press and Publicity—Mrs. William T. Sanger, Richmond.
Printing—Mrs. Herbert R. Drewry, Norfolk.
Convention—Mrs. Charles L. Rudasill, Richmond.
Courtesy—Mrs. C. J. Andrews, Norfolk.
Resolutions—Mrs. N. T. Ennett, Richmond.
Historian—Mrs. J. Allison Hodges, Richmond.
Parliamentarian—Mrs. M. N. King, Norfolk.
Report of State President.
Report of County Presidents:
Mrs. J. B. Dalton, Richmond, Auxiliary to the Richmond Academy of Medicine.
Mrs. H. M Snead, Petersburg, Post-Graduate Woman's Auxiliary.
Mrs. Franklin D. Wilson, Norfolk, Auxiliary to Norfolk County Medical Society.
Mrs. J. R. Tucker, Williamsburg, Auxiliary to James City and New Kent Counties Medical Society.
Mrs. John J. Cullinan, Hampton, Auxiliary to Elizabeth City County Medical Society.
Mrs. W. S. Snead, Newport News, Auxiliary to Warwick County Medical Society.
Greetings from the President—Dr. J. Carroll Flippin, and members of the Advisory Committee of the Medical Society of Virginia.
Address—Dr. Dean Lewis, President of the American Medical Association.

**Afternoon**

Scenic drive to Natural Bridge followed by afternoon tea.

**Thursday, October 26th**

9:00 A. M.—Registration Booth open.

**Second Session, General Meeting**
**9:00 A. M. to 12:30 P. M.**

Reports from delegates:
To American Medical Association—Mrs. Reuben F. Simms, Richmond.
To the Southern Medical Association—Mrs. James B. Stone, Richmond.
Unfinished Business.
Questions answered from Question Box.
New Business:
Recommendations from the Executive Board.
Report of Committee on Resolutions.
Introduction of Advisory Council for 1933-34.
Short talks on the following subjects:
Public Health Work—Dr. Roy K. Flannagan, Richmond.
The Value of Hygeia as a Health Journal—Dr. Southgate Leigh, Norfolk.
How the Auxiliary Can Help in Child Welfare Work—Dr. W. P. Jackson, Roanoke.
Some Important Phases of Auxiliary Work—Dr. W. P. McDowell, Norfolk.
Adjournment.

**The Post-Convention Board Meeting** will follow immediately.

**Afternoon**—Bridge tea. Fort Hill Club House.

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As officers were elected and Chairmen appointed for two years, at the Annual Convention in 1932, there will be no election or appointments at this meeting.

Every woman attending the Convention is cordially invited to these meetings.

## Organization.

The Woman's Auxiliary to the Medical Society of Virginia is eager to have every physician's wife in the state familiar with and interested in the work it is doing. We wish to enlist your interest in the work of your husband's Medical Society.

In the event your county is organized as an auxiliary to a local society already, we urge that you endeavor to increase your membership. If, however, you are not organized, would it be possible for you to call together wives of doctors in and near your county in an effort to form an axuiliary and report progress at our meeting in Lynchburg, October 24th-26th?

Your County Medical Society, through its advisory committee, must endorse your organization and can be of invaluable assistance.

Women who cannot organize as an auxiliary to a County Society are invited to become members-at-large of the State Auxiliary—dues 50 cents per year—which entitles them to attend all meetings of the State Auxiliary.

The State Chairman of Organization shall be pleased to have you communicate with her for details regarding formation of county and city auxiliaries and will render any assistance desired.

Should you visit Richmond, your chairman will be pleased to discuss any problems on organization with you in person.

Mrs. Joseph Bear,
*Chairman, Organization Committee.*

## An Invitation for the Southern Medical Association.

The members of the Woman's Auxiliary to the Richmond Academy of Medicine extend to

the wives of members of the Southern Medical Association a most cordial invitation to Richmond during the meeting scheduled for November.

Not only members of the Auxiliary but wives of all Richmond doctors are uniting to offer a most interesting program. Entertainment is being planned and every effort is being made to insure a pleasant and comfortable stay while in Richmond. Among other things, a trip to restored Williamsburg is to be a feature.

We are looking forward with great pleasure to having a large number of doctors' wives as our guests at this time.

# Book Announcements

**The History and Epidemiology of Syphilis.** The Gehrmann Lectures, University of Illinois, 1933. By WILLIAM ALLEN PUSEY, A. M., M. D., LL. D., Professor of Dermatology Emeritus, University of Illinois; sometime President of the American Dermatological Association and of the American Medical Association, Springfield, Illinois. Charles C. Thomas 1933. Octavo of 113 pages. Illustrated. Cloth. Price, $2.00, postpaid.

Dr. Wm. Allen Pusey, whose "History of Dermatology" was reviewed in these columns a short time back, is presenting a companion book the title of which is, "The History and Epidemiology of Syphilis." This is in reality three lectures which he delivered under the Adolph Gehrmann Endowment before the University of Illinois.

Remembering this, one understands at once the brevity of the work compared to the suggestion of the title; there being nothing of the encyclopaedic about it but rather more of the entertaining, and in this he is abundantly successful.

"The History of Syphilis" is much the best part and the reason is patent; the author enjoyed much more the writing of it. Here he is telling of the deeds of other men, men who by library contact have been his intimates for many years. As a matter of fact, when Dr. Pusey becomes biographical he is at his best.

He binds himself by the dead line of proven material when considering the disputed origin of Syphilis, and he advances no theory for which he cannot offer proof. This is no doubt best as a matter of record in medicine, where bad practice may follow partly proved conclusions.

On the other hand, it seems allowable to deduce historical things by other than direct evidence. It would be great fun to argue with him over the Beth-Peor incident in Deuteronomy, which this reviewer feels is evidence of a venereal diseases in ancient times, and since it was called a plague, not to be considered a gonorrhoea.

The lecture on the "Epidemiology of Syphilis" is well done. The difficulty of the task in the main is one of condensation. It is the kind of lecture which becomes increasingly difficult in proportion to the else-where interests of the audience. One does not have to talk interestingly to a man about his own work for the subject is all that is needed. To be interesting to the uninterested is the true gauge of the writer. In this class Dr. Pusey belongs.

THOS. W. MURRELL, M. D.

**Case Studies in the Psychopathology of Crime.** By BEN KARPMAN, M. D., Psychotherapist, St. Elizabeth's Hospital, Washington, D. C.; Professor of Psychiatry, School of Medicine, Howard University, Washington, D. C. Mimeoform Press. Washington, D. C. Large Octavo of 1026-x pages, with 14 charts and index. Price, $12.00 net, prepaid.

**Report to the United States Government on Tuberculosis, With Some Therapeutic and Prophylactic Suggestions.** By S. ADOLPHUS KNOPF, M. D. Revised and enlarged report submitted to the State Department, War Department and War Veterans Bureau as Government Delegate to the International Union Against Tuberculosis, held at The Hague, September 6-9, 1932. Procurable at the Office of the National Tuberculosis Association, 450 Seventh Ave., New York. Octavo of 59-xiii pages. Illustrated. Cloth. Price, $1.15.

## Your Card for the Directory

In September an information card was sent from the headquarters office of the American Medical Association to every physician in the United States and Canada. The information thus secured is to be used in the compiling of the thirteenth edition of the American Medical Directory.

Those who received this card and have not returned it should do so promptly whether or not any change has occurred in any of the points on which information is requested. If any reader failed to receive a card, he may aid by writing at once to the headquarters office, 535 N. Dearborn Street, Chicago, stating that fact and indicating such changes as he may desire in the information published in the 1931 issue of the Directory.

# Virginia Medical Monthly

Founded by Landon B. Edwards, M. D., April, 1874
Owned by Medical Society of Virginia Since November, 1919

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Alexander G. Brown, Jr., M. D., Richmond, *Chairman and Editor*
J. H. Neff, M. D., University R. L. Payne, M. D., Norfolk
Agnes V. Edwards, Richmond, *Business Manager*

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Volume 60 OCTOBER, 1933 No. 7


# Editorial

## Cerebrospinal Fluid.

Questions of physiology are necessarily of interest in active medical practice. Discussion of known functions of organs in current periodical medical publications, less restricted in circulation than the American Journal of Physiology, serve a useful purpose in bringing before practitioners matters in physiology. Pathology, symptoms, diagnosis, prognosis and treatment of disease is the better comprehended when physiology in the background is appreciated and more or less understood. In fact, it may be easy to support the thesis that medical and surgical practice as well as that of "the specialties" can only be skillfully followed in the light of a more or less constant study of modern physiology as it is being published and discussed in medical literature and in medical assemblies and revealed in medical research laboratories.

It would seem then that the local medical publication of a state organization, going out to the rank and file of practitioners, rural and urban, may happily seize an opportunity to bring to its readers problems under discussion touching physiology. It is with this thought that editorial comment is called to the address of Dr. George B. Hassin, Chairman of the Section on Nervous and Mental Diseases, at the eighty-fourth annual session of the American Medical Association at Milwaukee, June last. In this address an interesting discussion was pursued by the speaker upon the question of the "So-Called Circulation of the Cerebrospinal Fluid."*

In offering evidence on the question, the paper appears to define the word "circulation" as meaning that circulation of cerebrospinal fluid as would proceed from brain origin through brain channels to cord channels. While circulation may not necessarily proceed only in such a fashion, it has been, as stated, the usual teaching and belief that cerebrospinal fluid originates in choroid plexuses and passes through the recesses of Luschka to the basal cisterns of the brain. The fluid flows into the third ventricle through the foramina of Monro and to the fourth ventricle by the aqueduct of Sylvius, says one physiologist. To quote further, the cerebrospinal fluid of subarachnoid space communicates with the fluid in ventricles of the brain through the foramen of Magendie and through the foramina Luschka and numerous other apertures.

Hassin's interesting discussion affirms the only feature that seems to be established that there is a fluid in the ventricles of the brain, the subarachnoid spaces and the central canal. He notes the tissues of the brain and cord possess a fluid. By osmosis or other physiochemical factors, such tissue fluid, saturated with waste products, is transported to the adventitial spaces of walls of blood vessels and capillaries and thus enter the general vascular system.

*J. A. M. A., September 9, 1933, pages 821-823.

If obstruction, says Hassin, is in the cerebral ventricles (a tumor, for instance) or at the base of the brain (meningitis), stasis of the tissue fluids takes place in the form of internal and external hydrocephalus.

The studies of Sachs on cerebrospinal circulation are cited to show that the fluid does not circulate caudal or cephalad and that "a true circulation of the spinal fluid does not exist."

The discussion apparently turns upon the definition of the word "circulation." The author's points are interesting and afford an excellent review of recent treaties on the cerebrospinal fluid publications and may be read with interest by physicians. There is certainly no counterpart in the cerebrospinal system of the mechanism of transportation of its fluids as employed by the general body in cardiovascular circulation. It would seem that notwithstanding there is some intricate system by which cerebrospinal fluids are transported to perform its physiological function, originating therein, circulating therein and emerging therefrom to return to general vascular system.

**An Appraisal of the Value of Vaccine Therapy in Chronic Arthritis.***

When a practice in the use of new remedies becomes so common place that it is the subject of comment by laymen, it is quite time that the medical profession formulate definite views on the subject. Vaccine injections for chronic arthritis have been rather general. Arthritis is a common disease condition among the people. It incommodes, it gives pain, cripples and harrasses the patient, and they are seeking relief. They are found in the offices of regular and irregular practitioners, and they continue to come hoping for some improvement or surcease from disabled joints. One may turn to an article by Miller for a careful appraisal of the question. The author made careful survey of the publications and the opinions presented may receive sympathetic consideration by those readers who have not had the time or opportunity to carry on so careful an inquiry into the subject.

Miller submits the following conclusions:

"First, the not infrequent, brilliant therapeutic results which seem clinically to follow vaccine administration, justify the belief that vaccines do have a role in the comprehensive treatment of the arthritic patient. Just what the specific indications are for the use of vaccines, their dosage, their method of administration, etc., must still be left as open questions. At the moment it would appear that vaccine therapy in chronic arthritis is appropriately limited to the atrophic form, and has little, if any, application in the hypertrophic type.

"Second, the consensus of opinion inclines to the view that the mechanism whereby improvement occurs under vaccine administration is in some way related to a desensitization process rather than to the formation of specific antibodies. In harmony with such a concept, small doses of vaccine are most advocated, given preferably intravenously, and continued over a long period of time, avoiding pronounced constitutional reactions.

"Third, regardless of whether this conception is substantiated or not, it would seem apparent that in the light of more recent bacteriological studies, greater attention should be paid to the process of vaccine preparation, chiefly in terms of attempting to secure virulent strains of the autogenous disease-provoking organisms, and the avoidance of such measures as promote antigenic dissociation in preparing the vaccine for therapeutic use.

"Fourth, at present there are no so-called immunological or laboratory procedures which are established standards or indices of the therapeutic value of vaccines in the comprehensive program necessary for any arthritic patient.

"Finally, it is to be hoped that more rigorous regard for some of these principles which have been briefly alluded to, will, for the time being, both retard the extravagant claims which are made by some as to the value of vaccines in chronic arthritis, and at the same time provoke a more serious consideration of just what one is attempting to do when vaccines are used."

**The Lynchburg Meeting.**

Members of the Medical Society of Virginia are urged to make every effort to attend the coming meeting at Lynchburg, October 24th-26th. This is to be the sixty-fourth annual session of the Medical Society of Virginia. The headquarters will be the Virginian Hotel, at the corner of 8th and Church Streets. The local society of the medical fraternity in Lynchburg will welcome the visitors. Dr. D. P. Scott, of Lynchburg, is general chairman

*Southern Medical Journal, July, 1933, page 583.

of the local committee of arrangements and may be depended upon to do all he can with the assistance of fellow members of the committee to make the session a pleasant and successful one.

The registration and information bureaus, scientific and commercial exhibits will be in the Hotel. Here in the ballroom on Tuesday afternoon from 4 to 6 P. M., o'clock, will be held clinics by Drs. Dean Lewis and Louis Hamman. On Tuesday morning at 10:30, a golf tournament will be played at the Boonsboro County Club.

On Tuesday night, at 8:00 P. M. o'clock, the general session of the Society opens. This will be held in the Knights of Columbus Hall, a short distance from the Hotel. On this occasion, the address of the President, Dr. James Carroll Flippin, will be heard. In addition, addresses by Dr. Dean Lewis, President of the American Medical Association, and Dr. Louis Hamman, both of Baltimore, will be heard. The program, in the matter of range of subjects to be presented as well as in the practical value to the practitioners promises to afford interesting and instructive material.

The Society may hear with interest the address by the President, Dr. Flippin. During the term of his office, he has arduously discharged the duties of his office and has given freely of his time in furthering the interests of the Medical Society of Virginia. Subjects that have come up for decision and administration have received at his hand careful consideration. The membership may well attend upon his address and recommendations with appreciative consideration.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Furnishing Speakers for Local Programs.**

In cooperation with the Department of Clinical Education, which during the spring called the attention of the local societies to the need for pediatric clinics, the Clinch Valley Medical Society is putting emphasis upon pediatrics at its fall meeting at Tazewell during the last week in September. A list of eighteen members of the Pediatric Society of Virginia who have volunteered their services as clinicians for the programs of local societies was furnished to the Department by the Chairman of the Child Welfare Committee of the Pediatric Society, Dr. F. D. Wilson, of Norfolk. Two members of this list, Drs. Littleton Davis and R. H. DuBose, of Roanoke, were selected by the Clinch Valley Society to present papers. On September 30th at Tazewell Dr. Davis will speak on "Colic" and Dr. DuBose on "Infant Feeding."

In arranging this pediatrics program, the Clinch Valley Society follows the lead of the Medical Society of Northern Virginia which, on August 15th, conducted a children's clinic with Drs. L. T. Royster and R. V. Funsten, of the University Hospital, as invited speakers.

The Department of Clinical Education has been able in several instances to bring together the local societies which wish to hold pediatric clinics and the members of the Pediatric Society of Virginia who have very generously volunteered to serve as clinicians. This form of cooperation will be continued during the coming year according to plans adopted by the Department of Clinical Education at its recent meeting, subject to the approval of the House of Delegates.

**University Hospital Clinics Postponed Until January.**

Because of conflicts with the meetings of the State Medical Society in October and of the Southern Medical Association in November, the regular fall clinic at the University of Virginia Hospital will be postponed until January. An announcement of the dates and program will be mailed to every physician in Virginia. This will be the twelfth in the series of the University Post-Graduate Clinics which, according to all reports of their value from those who attend them, have become established as a regular feature of post-graduate education in Virginia.

**Seventh Circuit of Classes in Prenatal and Postnatal Care.**

Having completed thirty-three of his post-graduate classes, covering the entire southern

portion of Virginia except the territory in the vicinity of Danville, Dr. M. E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, entered upon a new schedule of courses in Martinsville, Danville and South Boston in the week of September 18th. An additional class is expected to be formed in Chatham after the first meeting on September 19th, and the Mecklenburg County Society, at its meeting on September 26th, will consider the establishment of a course at Boydton.

The advance enrollment for the classes is thirty-one physicians. The interest in the program is due to the excellent cooperation of the local committees in the several centers, particularly Dr. J. M. Shackelford at Martinsville, Drs. I. C. Harrison and P. W. Miles in Danville, and Dr. W. C. Brann in South Boston.

The schedule of classes for the new circuit, with the time and place of meetings and advance enrollments, is as follows:

Martinsville, Mondays, beginning September 18th at 10:00 A. M. in the Hospital. Organization of the group in charge of Dr. J. M. Shackelford. Advance enrollments reported by Dr. Shackelford: Drs. B. C. Culler, E. M. McDaniel, A. W. Rucker, J. A. Shackelford, J. M. Shackelford, F. B. Teague and C. R. Titus.

Chatham, Tuesdays, beginning September 19th at 3:00 P. M. in Hotel Bennett. Temporary committee for arranging first meeting: Drs. O. L. Ramsey, A. M. Owen and Sam Reynolds. In addition to these three, the following physicians will attend the first meeting to decide upon continuing the course: Drs. C. D. Bennett, R. W. Bennett, C. C. Grove, M. E. Mease, W. H. Walcott and W. J. Wigington.

Danville, Wednesdays, beginning September 20th at 4:00 P. M. in the Public Health Office, Municipal Building. Local committee in charge of membership and clinical material: Drs. I. C. Harrison and P. W. Miles. Advance enrollments: Drs. L. O. Crumpler, Houston Gwynn, I. C. Harrison, J. L. Jennings, W. E. Jennings, G. W. Johnson, H. J. Langston, S. A. Mallory, P. W. Miles, Edward H. Miller, Jr., J. L. Nall, J. J. Neal, Samuel Newman, C. W. Pritchett, H. W. Pritchett, W. B. Sager, Raymond Scruggs, Charles Wharton and W. C. Yeatts.

South Boston, Thursdays, beginning September 21st at 3:00 P. M. in the Municipal Building. Local committee in charge of membership and clinical material: Dr. W. C. Brann. Advance enrollments: Drs. C. D. Barksdale, W. C. Brann, I. K. Briggs, S. D. Gardner, R. H. Fuller and J. R. Lacy.

Boydton, Fridays, beginning September 29th subject to approval of Mecklenburg County Medical Society at its meeting on September 26th. Advance enrollments: Drs. G. H. Carter, G. N. Carter, Wm. T. Dodd, A. T. Finch, Jr., L. H. Hoover, B. J. Montgomery and W. L. Yarn.

**Close of Dr. Lapham's Work in Southwest Virginia.**

The sixth circuit of classes in Tazewell, Lebanon, Richlands, Bristol, Abingdon, and Marion, completed their ten weeks of study on September 15th. The reports for the entire course are not available at this writing, but it is encouraging to note that the written comments of members of the classes continue to indicate the overwhelming preponderance of approval for this work and of desire for study of other subjects by the same means. The exact status of the replies of members of all classes is as follows: 213 of 219 replies have rated the lectures as excellent or good, 100 of 189 replies consider the clinics either excellent or good, 204 of 210 replies consider the course worth the cost in time and money, and 200 of 206 desire further courses in other subjects. The subject most generally preferred is pediatrics with a vote of eighty-five.

**Meetings of the Joint Committee and of the Department of Clinical Education.**

At a meeting on September 11th to formulate a report to be presented to the House of Delegates, the Joint Committee on Prenatal and Postnatal Instruction, with seven of its eight members present, unanimously voted that the program of classes in prenatal and postnatal care should be continued until October of next year in order that they may be offered to every section of the state. The Joint Committee further voted unanimously that it considered it desirable for the Medical Society of Virginia to maintain its support of this program, if not in the present proportions, at least in an appreciable amount.

Immediately following that meeting, the Department of Clinical Education voted to accept and endorse the report of its subordinate

body, the Joint Committee. The Department also unanimously recommended an appropriation of $1,500 from the Medical Society of Virginia to be used for continuing the lectures and clinics in prenatal and postnatal care, for carrying on the activities of the Department of Clinical Education in furnishing speakers for clinics and sending notices of scientific meetings, and for a small amount to be used by the Department in developing an experimental program of pediatric courses in cooperation with the Pediatric Society of Virginia.

Geo. W. Eutsler,
*Executive Secretary, Department of Clinical Education*
*Secretary, Joint Committee on Prenatal and Postnatal Instruction.*

# Proceedings of Societies

**Roanoke Academy of Medicine.**

At a meeting of the Roanoke Academy of Medicine on August 25th, the following resolution was presented by the Executive Committee and passed by the Academy.

"In the light of our present knowledge and the ruling of the American Medical Association, as set forth in a recent Journal, and according to a telegram received today from the secretary of this association, we urge that each and every member of the Academy of Medicine of Roanoke sign the National Recovery Act; thereby endorsing and showing his willingness to cooperate with our government in this undertaking."

We are attempting to cooperate in every possible way in so far as our employees are concerned. The doctors are signing the code individually and we are trying to cooperate in spirit as well as in action.

Charles H. Peterson, M. D.
*Secretary.*

**The Fairfax County Medical Society**

Met on August 24th at the home of Dr. William Meyer at Herndon, Va. The meeting was well attended and several visitors were present. Dr. Sigmund Newman, of Vienna, read a paper on "Diabetic Coma" and Dr. Meyer presented an interesting report of an unusual case of appendicitis. Delegate and alternate were named to represent the Society at the Lynchburg meeting of the State Society and Dr. Charles F. Kinchloe, East Falls Church, was elected to membership.

Officers for the coming year were elected as follows: President, Dr. Sigmund Newman, Vienna; vice-presidents, Dr. R. L. Wilkins, Alexandria, and Dr. E. S. Waring, Fairfax; treasurer, Dr. F. M. Brooks, Fairfax Station; and secretary, Dr. A. L. Carson, Jr., Fairfax. Both of the last named were re-elected.

After adjournment an excellent dinner was enjoyed at the Dranesville Inn.

**The Southampton County Medical Society**

Met in Franklin, Va., on the afternoon of September 14th, at which time papers were read by Drs. P. D. Camp and Warren T. Vaughan, invited guests of Richmond. Following this meeting, dinner was served at the Stonewall Hotel.

Dr. John W. Smith, Branchville, is president of this organization and Dr. W. T. McLemore, Courtland, secretary.

**Loudoun County Medical Society.**

In our September issue we announced that Dr. H. P. Gibson and Dr. W. O. Bailey, both of Leesburg, had been re-elected president and secretary-treasurer, respectively, of the Loudoun County Medical Society. In addition to these, Dr. J. E. Clagett, Hamilton, and Dr. J. B. Hackley, Purcellville, have been named vice-presidents.

**The Southside Virginia Medical Association**

Held its regular quarterly meeting in Emporia, Va., on September 12th, with a large attendance. All papers on the program were read and freely discussed. The opinion was expressed by many that this was one of the best meetings in the history of the Society. At the close of the scientific program, the visiting doctors were entertained at a delightful dinner by the local profession.

The next meeting of this association will be held in Petersburg, on December 12th. Dr. D. C. Mays, Church Road, is president, and Dr. R. L. Raiford, Franklin, secretary.

# News Notes

**Lynchburg—Our Convention City.**

Medical interest in Virginia is largely centered at this time on our annual meeting to be held in Lynchburg, October 24th, 25th and 26th, under the presidency of Dr. J. Carroll Flippin, dean of the Department of Medicine of the University of Virginia. Though Lynchburg has extended an invitation to the State Society several times, this will be our first meeting in that city since 1921, and it is worth a trip there to see the marvelous improvements since that time.

The President has been fortunate in securing as his guests two Hopkins professors—Dr. Louis Hamman and Dr. Dean Lewis, the latter being at this time President of the American Medical Association. Both are teachers out of the ordinary and will have excellent and helpful messages for our members. They are also to conduct a medical and a surgical clinic, respectively. As these clinics as well as their addresses are to be on the first day, you will want to come early and stay late.

As at the Richmond meeting, the Lynchburg Academy was asked not to have entertainments for the members. There will be the golf tournament on the first day, however, and, as usual, the ladies will be looked after and entertained by the wives of the doctors of Lynchburg.

This is the last call for the Lynchburg meeting, so pull out your grip and get ready to start. Besides being something of a railroad center, there are excellent highways leading into the "Hill City" for motorists from all sections of the State.

**Delegates to Lynchburg Meeting.**

As we are anxious to have a full representation in the House of Delegates at our Lynchburg meeting, October 24th-26th, all component societies who has not reported names of their delegates and alternates are urged to send them at once to the Executive Secretary, 1200 East Clay Street, Richmond.

The following is a list of delegates and alternates who have been reported to this time:

| *Delegate* | *Society* | *Alternate* |
|---|---|---|
| | ALBEMARLE | |
| Dr. E. L. McQuade | | Dr. F. C. McCue |
| Dr. W. E. Brown | | Dr. B. M Randolph |
| Dr. A. D. Hart | | Dr. H. L. Baptist |
| | ALEXANDRIA | |
| Dr. S. B. Moore | | Dr. M. D. Delaney |
| | ALLEGHANY-BATH | |
| Dr. M. B. Jarman | | Dr. S. P. Hileman |
| Dr. L. E. Hayes | | Dr. B. H. Tatum |
| | AMELIA | |
| Dr. J. M. Habel | | Dr. H. C. Rucker |
| | ARLINGTON | |
| Dr. W. C. Welburn | | |
| | AUGUSTA | |
| Dr. A. F. Robertson | | Dr. Guy Fisher |
| | FAIRFAX | |
| Dr. W. P. Caton | | Dr. F. M. Brooks |
| | FREDERICKSBURG | |
| Dr. R. N. Harris | | Dr. C. Campbell |
| Dr. J. Minor Holloway | | Dr. Frank C. Pratt |
| Dr. M. W. Minor | | |
| Dr. W. A. Harris | | Dr. A. M. Arritt |
| Dr. H. W. Patton | | Dr. L. F. Lee |
| | HALIFAX | |
| Dr. J. B. Lacy | | Dr. J. D. Hagood |
| | JAMES CITY-NEW KENT | |
| Dr. J. R. Parker | | |
| | LOUDOUN | |
| Dr. G. Franklin Simpson | | Dr. H. P. Gibson |
| | LYNCHBURG ACADEMY | |
| Dr. Sam Wilson | | Dr. John H. Bell |
| Dr. George T. Harris | | Dr. J. Henry Rawlings |
| Dr. John Walker | | Dr. Bernard H. Kyle |
| | MECKLENBURG | |
| Dr. W. W. Wilkinson | | Dr. W. L. Varn |
| | NORTHERN NECK | |
| Dr. Geo. H. Long | | Dr. Loring Hammer |
| Dr. O. W. Carper | | Dr. L. F. Hansbrough |
| Dr. F. C. Downey | | Dr. D. O. Foley |
| Dr. C. O. Dearmont | | Dr. C. H. Iden |
| Dr. P. W. Boyd | | Dr. H. H. McGuire |
| Dr. J. R. Boldridge | | Dr. C. H. Armentrout |
| | MID-TIDEWATER | |
| Dr. E. T. Sandberg | | |
| Dr. M. A. Tabb | | |
| Dr. W. E. Croxton | | |
| Dr. J. N. DeShazo | | |
| Dr. J. R. Parker | | |
| Dr. L. O. Powell | | |
| Dr. Clarence Campbell | | |
| *Dr. William Gwathmey | | |
| | NELSON | |
| Dr. S. G. Miller | | Dr. H. G. Dickie |
| | NORFOLK | |
| Dr. P. St. L. Moncure | | Dr. J. D Collins |
| Dr. W. P. McDowell | | Dr. C. C. Smith |
| Dr. C. Lydon Harrell | | Dr. M. S. Fitchett |
| Dr. F. C. Rinker | | Dr. Claiborne Willcox |
| Dr. W. B. Martin | | Dr. Frank Redwood |
| | NORTHAMPTON | |
| Dr. Carey Henderson | | Dr. Walter Jackson |
| | NORTHERN NECK | |
| Dr. B. H. B. Hubbard | | |
| Dr. V. L. Litzinger | | |
| Dr. E. T. Ames | | |
| Dr. R. E. Booker | | |

| *Delegate* | *Society* | *Alternate* |
|---|---|---|
| | PATRICK-HENRY | |
| Dr. J. M. Shackelford | | Dr. F. B. Teague |
| Dr. J. T. Shelbourne | | Dr. W. N. Thompson |
| | DANVILLE-PITTSYLVANIA | |
| Dr. S. E. Hughes | | Dr. P. W. Miles |
| | PRINCESS ANNE | |
| Dr. Cora Z. Corpening | | Dr. H. Floyd Dormire |
| | PRINCE EDWARD | |
| Dr. Ray A. Moore | | Dr. Thos. E. Knight |
| | RICHMOND ACADEMY | |
| Dr. J. M. Hutcheson | | Dr. Joseph Geisinger |
| Dr. W. H. Higgins | | Dr. F. M. Hodges |
| Dr. R. Finley Gayle | | Dr. P. D. Lipscomb |
| Dr. Carrington Williams | | Dr. J. M. Whitfield, Jr. |
| Dr. Thomas D. Jones | | Dr. H. A. Bullock |
| Dr. Karl Blackwell | | Dr. E. C. Eggleston |
| Dr. W. B. Blanton | | Dr. J. W. Henson |
| Dr. H. H. Ware | | Dr. J. B. Stone |
| | ROANOKE ACADEMY | |
| Dr. W. L. Powell | | Dr. T. J. Hughes |
| Dr. Frank A. Farmer | | Dr. S B. Cary |
| Dr. Charles H. Peterson | | Dr. T. A. Kirk |
| | ROCKBRIDGE | |
| Dr. O. H. McClung | | Dr. J. E. Seebert |
| | SOUTHAMPTON | |
| Dr. W. T. McLemore | | Dr. R. H. Cobb |
| | SOUTHWESTERN | |
| Dr. F. H. Smith | | Dr. D. L. Kinsolving |
| Dr. T K. McKee | | Dr. A. B. Graybeal |
| Dr. E. M. Chitwood | | Dr. C F. Graham |
| Dr. H. T. Smith | | Dr. R. H. Harrington |
| Dr. A. B. Woolwine | | |
| Dr. D. S. Divers | | Dr. D. B. Stuart |
| Dr. J. L. Early | | Dr. A. M. Showalter |
| Dr. Beverley F. Eckles | | *Dr. W. R. Gardner |
| Dr. W. C. Caudill | | Dr. M. C. Newton |
| | WARWICK | |
| Dr. T. C. Lawford | | Dr. E. L. Alexander |

### The Virginia Pediatric Society

Will hold its annual meeting at the Hotel Carroll, Lynchburg, Va., October 25th at 1 o'clock. Luncheon will be served at that hour. Dr. James A. Lyon, of Washington, D. C., will be the guest speaker, his subject being Diagnosis and Treatment of Rheumatic Heart Diseases in Children. Other matters of interest will come up for discussion. All members are urged to attend.

Officers of the Society are: President, Dr. James B. Stone, Richmond; vice-president, Dr. Roger H. DuBose, Roanoke; and secretary-treasurer, Dr. Thomas D. Jones, Richmond.

### Married.

Dr. Ernest G. Scott, Lynchburg, and Miss Adele Adelberg, Louisville, Ky., September 2nd.

Dr. James Newton Williams and Miss Dorothy Henriette Behle both of Richmond, August 29th. Dr. Williams is a graduate of the class of '30, Medical College of Virginia and served his internship at St. Luke's Hospital, Richmond.

*Died since name was sent in.

Dr. Yates S. Palmer, class of '31, Medical College of Virginia, and Miss Lillian Allen Wrigglesworth, Victoria, Va., September 2nd. Dr. Palmer served his internship at the Holy Name Hospital, Teaneck, N. J. They will make their home in Valdese, N. C.

Dr. George Washington Holmes, Winston-Salem, N. C., and Miss Lucille Stokes Field, Richmond, Va., September 9th. Dr. Holmes graduated from the Medical College of Virginia class of '31, and served his internship at Memorial Hospital, Richmond.

Dr. Thomas Moore Hearn, Jr., Richmond, Va., and Miss Jane Alyda Colclough, Oakland, Calif., August 12th. Dr. Hearn is a member of the class of '31, Medical College of Virginia, and served his internship at the Santa Barbara Cottage Hospital, Santa Barbara, Calif. They will make their home in San Gabriel, Azusa, Calif.

Dr. Linwood Farley and Miss Evelyn Byrd Nelson, Courtland, Va., September 23rd.

Dr. John Edmund Roberts, formerly of Alexandria, Va., and Miss Lucy Ambler Lee, daughter of Dr. and Mrs. Claude M. Lee, of Charlottesville and Wusih, China, September 2nd. Dr. Roberts is a member of the class of '32, University of Virginia and interned at the University Hospital.

Dr. James Albert Miller and Miss Susan Cover Steck, both of Winchester, Va., September 30th. Dr. Miller was formerly located at New Market, Va.

Dr. Leslie Emerson Morrissette, formerly of Richmond, Va., and a member of the class of '30, Medical College of Virginia, and Miss Clover Boldt Miles, New York City, September 19th.

### Dr. J. G. Lyerly

Announces the opening of his offices in suite 300 Medical Arts Building, Richmond, Va., with practice limited to neurological surgery and oral and plastic surgery of the face.

For the past twelve years he has been associated with Dr. C. C. Coleman in the practice of the above specialties. At the present time Dr. Lyerly is Assistant Professor of Neurological Surgery in the School of Medicine and Professor of Oral Surgery in the School of Dentistry of the Medical College of Virginia. He is a Fellow of the American College of Surgeons and a member of the Harvey Cushing

Society which is composed of neurological surgeons with a few neuro-physiologists, neuropathologists, neuro-anatomists, and roentgenologists to advance the study of Neurological Surgery.

**Dr. Carl W. Shaffer,**

Class of '15, University of Virginia, Department of Medicine, has just located at 217 South Pitt Street, Alexandria, Va. Dr. Shaffer entered the medical corps of the U. S. Army in 1917, and was promoted to the rank of major in 1929. His last service, after returning from Hawaii, was at the William Beaumont General Hospital, El Paso, Texas, where he was stationed when he retired from active Army service in August, 1933.

**S. M. A. Meeting.**

In the midst of preparations for our own annual meeting, we wish also to remind our readers that the Southern Medical Association is to have its annual meeting in Richmond, Va., November 14th-17th, under the presidency of Dr. Irvin Abell, of Louisville, Ky. Every physician of the South who is a member of his state and county medical societies is eligible to membership. If not a member, send your name with dues of $4.00 to that Association, Empire Building, Birmingham, Ala., and attend the Richmond meeting.

There will be sixteen sections and four conjoint meetings: American Society of Tropical Medicine; National Malaria Commission; Southern Branch, American Public Health Association; and Southern Section, Society for Experimental Biology and Medicine. In this way, every phase of modern scientific medicine and surgery will be covered by the programs.

Arrangements have been made to have the various sections and four special meetings as close together as possible that members may have the privilege of selecting from the programs the features in which especially interested.

**Dr. Alfred M. Palmer,**

Who recently completed an internship at Mercy Hospital, Altoona, Pa., has just located for general practice in Clarendon, Va. He is a member of the class of '32, Georgetown University School of Medicine.

**Director of Henrico County Health Department.**

Dr. A. L. McLean, for several years director of the Henrico County Health Department, recently resigned to become associate professor of preventive medicine at Dalhousie University, Halifax, Nova Scotia. He has been succeeded by Dr. E. L. Stebbins who has been with the State Health Department for a couple of years.

Dr. Stebbins is a native of Iowa and a graduate from Rush Medical College of Chicago. He took post-graduate work in public health and preventive medicine at Johns Hopkins University and is considered an authority on these subjects.

**Dr. Harry J. Warthen,**

Who recently returned after several months spent in attending European clinics, has opened offices in Suite 707, Medical Arts Building, Richmond, Va., and will limit his practice to surgery.

**Dr. William H. Turner, Jr.,**

Of the class of '18, University of Virginia, Department of Medicine, who recently returned to this country after several years' service in the Presbyterian mission work in China, has located for general practice at Round Hill, Va.

**Richmond Doctors Change Locations.**

Dr. Lee E. Sutton announces removal of his residence and offices to 2601 Grove Avenue.

Dr. Basil B. Jones, Dr. A. S. Hurt, Jr., and Dr. R. A. Nichols, Jr., also announce removal of their offices to 1028 West Franklin Street this city.

**Dr. W. L. Varn,**

South Hill, Va., has been named service officer for the coming year of the Crews-Epperson-Puryear Post No. 79, American Legion, in that town.

**Dr. John Hamilton**

Has recently opened his private office at Nassawadox, Va., for the practice of Internal Medicine in connection with his work at the Northampton-Accomac Memorial Hospital.

**News Notes from Medical College of Virginia.**

Dr. Thomas W. Murrell, associate professor of dermatology and syphilology, was the principal speaker at a meeting of the Fayette County Medical Society of West Virginia, September 12th.

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Dr. Harry Bear, dean of the school of dentistry, attended the seventy-fifth annual session of the American Dental Association in Chicago. Other members of the faculty at-

tending were Dr. S. F. Bradel, Dr. W. B. Gurley, Dr. R. L. Simpson, Dr. Harry Lyons, Dr. J. C. Forbes and Dr. R. J. Main.

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Dr. Lewis E. Jarrett, newly appointed superintendent of the hospital division, attended the annual meeting of the American Hospital Association in Milwaukee, September 11th-15th.

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The portrait of Dr. John Cullen, first professor of Theory and Practice of Medicine, will be unveiled on October 12th. The portrait as a gift to the college by the descendants of Dr. Cullen.

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Alumni visitors to the college recently were: Dr. M. W. Crafford '09, Dr. A. C. Broders, '10, Dr. C. G. Gage '32, Dr. Hunter Wolfe '28, Dr. R. L. Raiford '06, and Dr. C. P. Jones '95. Dr. C. P. Ford '17, and family, of Huntington, W. Va., and Dr. F. R. Ruff '13, and son, of Fresno, Calif., also visited the college during the month of August.

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The ninety-sixth session of the college opened with convocation exercises in the Egyptian Building at 12:00 noon, September 13th, with routine class work following at two o'clock. Registration although somewhat better than was expected in the early summer is a little below normal.

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Patient visits to the outpatient department for the month of August numbered 5,590. This represented 40 per cent white and 60 per cent colored patients. The average number of patients handled a day was 207.

---

Health services as performed by the college increased from 94,633 in 1931-32 to 102,616 in 1932-33, each health service representing a patient admitted to one of the hospitals or given service in one of the various clinics, dental or general medicine, of the institution.

**Dr. William Beverley Wilkins,**

Of the class of '32, University of Virginia, Department of Medicine, has just located in Barrett Building, Alexandria, Va., for the practice of medicine. Dr. Wilkins served his internship at the Employees' T. C. I. Hospital, Birmingham, Ala.

**Dr. Eugene W. Senter,**

Who served an internship at the Municipal Hospital, Hartford, Conn., after graduation from the Medical College of Virginia in 1932, has now entered the Medical Corps of the U. S. Army.

**Dr. B. W. Rawles, Jr.,**

Of the class of '30 University of Virginia, Department of Medicine, where he has been assisting in the Department of Roentgenology, has entered upon an internship in X-ray and radium at the Memorial Hospital, New York City, which will continue until the end of this year.

**Dr. M. Tieche Shelton,**

Who graduated from Johns Hopkins University in 1926 and for several years has been connected with the Department of Surgery of Yale University, has located for practice in Harrisonburg, Va., with offices in Professional Building.

**Dr. J. E. Harris,**

Winchester, Va., for the past ten year X-ray specialist at Memorial Hospital in that city, has resigned this position to enter private work in Winchester.

**Dr. George W. Skaggs,**

An alumnus of the Medical College of Virginia, who has been located for some time at Page, W. Va., has located in Princeton, W Va., with offices at 208 Highland Avenue.

**Dr. J. A. Ronan,**

Class of '32, Georgetown University School of Medicine, who interned at Mercy Hospital in Altoona, Pa., has located for general practice in Alexandria, Va. His offices are at 108 North Washington Street.

# Obituary Record

**Dr. Albert Edwards Wilson,**

Norfolk, Va., died suddenly, September 8th, after a short illness with heart and kidney complications. He was a native of Surry County, Va., and sixty-five years of age. He graduated from the University of Maryland, School of Medicine, Baltimore, in 1896 and had been a member of the Medical Society of Virginia for thirty-one years. He was prominent in political and religious as well as medical circles and was elected a member of the Norfolk City Council by an overwhelming vote a little more than a year ago. Dr. Wilson was a charter member of the Lions Club of Norfolk and also a charter member and twice president of the Business Men's Bible Class of his city. His wife and a son, survive him. Two

of his brothers are Drs. N. G. and F. D. Wilson, of Norfolk.

The *Norfolk Ledger-Dispatch*, in an editorial notice, paid a beautiful tribute to the character of Dr. Wilson.

---

The Norfolk County Medical Society unanimously adopted the following resolutions relative to the death of Dr. Albert Edwards Wilson:

Resolved: That the Society expresses its keen regret at the loss of Dr. Wilson, to whom it had looked for so long and so confidently to uphold the best traditions of the profession.

That it acknowledged in him, the physician and councilman, a man who in earnestness, faithfulness and consecration discharged his duties in an inimitable way.

His high character, gentle courtesy, and nobleness of purpose endeared him to all those who knew him.

That a page be set aside in the minute book of this Society to his memory.

That a copy of these resolutions be sent to his family with our sincerest sympathy.

That these resolutions be published in the Virginia Medical Monthly.

Geo. A. Renn, M. D.,
Charles W. Doughtie, M D.,
Harvie S. Baker, M. D.,
*Committee.*

**Dr. William Ryland Gwathmey,**

Ruark, Va., died at his home on August 25th, after an illness of several months. He was a native of King and Queen County, Va., and sixty-three years of age. He graduated from the Medical College of Virginia about forty years ago and had since that time practiced his profession in Middlesex and nearby counties. He was widely known and a much beloved physician and citizen. He was one of the organizers and an ex-president of the Mid-Tidewater Virginia Medical Society. His wife survives him.

---

An Appreciation

It was my sad duty and privilege to go to William Gwathmey's funeral and burial yesterday.

A great man has passed on. William was a gentleman of the old school of medical practitioners of Tidewater, Virginia, but he was just up to date as any doctor in his territory. He blended the old with the new as no other man could have done. Of Middlesex's population of today, he was the first one to greet many of them and he did it with a smile as only William could smile that genial smile of his. Will'am had a good word for everybody. I knew him intimately for the last eight years and I never heard him speak ill of any one. He was a great help to me in establishing the Mid-Tidewater Medical Society. He was a very active member and was one of its first presidents.

Will'am understood human nature and its frailties and he went a long ways to help out. It takes many decades to make a man like William. We buried him yesterday in King and Queen, his native soil, the county that gave him birth sixty-three years ago.

"He did his work as he saw it his duty to."

What more can be said of a man?

James W. Smith, M. D.

**Dr. Joseph A. Pilout,**

Sutherland, Va., died suddenly as the result of a heart attack at his home in that place on December 22, 1932. Dr. Pilout was a native of Richmond, and about fifty-eight years of age. He graduated from the Medical College of Virginia in 1903 and had practiced in Dinwiddie County from shortly after that time. He had been a member of the Medical Society of Virginia for nearly thirty years. He is survived by his wife and five children.

**Dr. William J. Weindel,**

Marion, Va., died September 7th at his home in that place. He was a native of Kentucky and was fifty-eight years of age. Dr. Weindel graduated from the former Kentucky School of Medicine, Louisville, in 1897, but had made his home in Virginia for over twenty years. He was a member of several fraternal organizations and had been a member of the Medical Society of Virginia since shortly after locating in this State. His wife and two daughters survive him.

**Dr. Henry Jackson Hayes,**

An alumnus of the Medical College of Virginia in the class of '14, and a native of Richmond, Va., died at his home, Memphis, Tenn., September 15th. One of his brothers is Dr. L. E. Hayes, of Covington, Va. He was for a time located in Richmond at which time he was a member of the Medical Society of Virginia. He limited his work to neurology and psychiatry.

**Dr. Charles Wise Byrd,**

New York, died September 14th, of heart disease. He was a native of Accomac County, Va., and was forty-seven years of age. Dr. Byrd graduated from the former University College of Medicine, Richmond, Va., in 1909. He had been a surgeon to the Manhattan Eye, Ear and Throat Hospital for some years. His wife and one daughter survive him.

**Dr. John M. Dodson,**

Well known to fellows of the American Medical Association as Director of the Bureau of Health and Public Instruction, died at his home in Chicago, August 15th, aged seventy-four years. Death was due to uremia. He was for many years dean of Rush Medical College until 1923 when he became an executive with the A. M. A. In his work with this organization, he was also associated with the editorial staff of *Hygeia*, the health magazine.

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# Virginia Medical Monthly

OFFICIAL PUBLICATION OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 60, No. 8.
WHOLE No. 977.

RICHMOND, VA., NOVEMBER, 1933

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## THE VALUE OF THE ROENTGEN RAY IN THE MANAGEMENT OF DUODENAL AND GASTRIC ULCERS.*

CHARLES H. PETERSON, M. D., Roanoke, Va.

In a former article,[1] the Roentgen ray appearances of some unusual conditions of the stomach and duodenum were discussed. While these extremely unusual conditions are interesting from a diagnostic standpoint, it is the usual conditions which are more frequently encountered that more vitally concern both the roentgenologist and the physician referring the case.

Peptic ulcer, occurring in the duodenum or stomach, frequently requires medical treatment over a long period of time and the roentgenologist is afforded opportunity to follow these cases along over a period of months or years. A comparison of the findings at time of the different examinations gives a good insight into the individual's ability to respond to medical treatment and into the value of the treatment in each case. Some patients respond very promptly to medical treatment, with both clinical and x-ray signs of improvement, and continue to remain symptom free over a long period of time. Others seem to grow steadily worse, in spite of dietary or medical treatment, and surgical intervention is necessary. It is the purpose of this paper to consider more the general impressions received from examining and re-examining these patients, rather than to discuss the differential diagnostic features and the technical procedures.

Duodenal ulcer is the most common organic lesion encountered in x-ray examination of the gastro-intestinal tract. With duodenitis, it is one of the most frequent causes of chronic abdominal distress.

Many duodenal ulcers are easily diagnosed, but difficulty is encountered with some, and the textbook "clover leaf" deformity of the cap is the exceptional finding. It is unjust to the patient to have a positive diagnosis made unless the evidence is conclusive, for such a diagnosis means strict dietetic supervision over a long period of time and, usually, inability to procure additional life insurance. It is then with hesitancy that this diagnosis should be made, and the x-ray examination should be complete in every detail. The fluoroscopic examination is the most important of the x-ray procedures. Examination in the antero-posterior position and visualization of the cap from every possible angle, with the patient in the vertical and horizontal positions, is necessary in every case. It frequently happens that a very small change in the cap can be demonstrated only under the fluoroscope, unless direct pressure is applied over the cap while the films are being taken.

Second in importance to the fluoroscopic examination is the taking of serial films in a position which has been determined from the fluoroscopic examination and which best shows the portion of the cap to be investigated.

The complications usually seen by the roentgenologist are from penetration and from obstruction caused by scar tissue formation. A certain amount of scar tissue is formed with every chronic duodenal ulcer and the deformity produced by the ulcer remains over an indefinite period of time, even though the ulcer may be healed. This makes it difficult to state, from an x-ray standpoint, whether or not a chronic duodenal ulcer is improving. The amount of obstruction can be more easily determined and varies with the amount of scarring and spasm in the region of the ulcer.

The healing of the acute ulcers can be accurately observed. These acute ulcers some times give a very large gastric residue that disappears completely when treatment is instituted and secondary spasm is controlled. The residue from scar tissue formation, however, usually increases as the ulcer heals, and is a good index to indicate when treatment should

*Read before the Roanoke Academy of Medicine at Jefferson Hospital, December 5, 1932, as a part of the Symposium on Gastric and Duodenal Ulcers.

be changed from medical to surgical. A persistently large gastric residue at the six-hour examination calls for surgical procedures to overcome the obstruction. Penetration is a less frequent finding than obstruction and is infrequently seen except in rather large ulcers where treatment has been neglected. In the average case, where medical treatment has been carefully followed, decided improvement is found. The amount of initial residue is decreased and the ulcer crater diminishes in size. Rigid medical treatment usually produces local x-ray signs of improvement.

The possibility of a duodenal ulcer undergoing malignant degeneration is extremely remote. In this characteristic, duodenal ulcers contrast sharply with gastric ulcers, where malignant degeneration occurs in a definite percentage of the cases.

Peptic ulcers do not occur as frequently in the stomach as in the duodenum. Their manner of healing likewise is different. While we some times find extensive scarring from a gastric ulcer, many are seen to completely disappear under medical treatment apparently without scar tissue formation. For this reason, healing can be followed in a gastric ulcer much more accurately than in an ulcer of the duodenum. While small gastric ulcers tend to heal under medical treatment, the larger ones do not seem to be favorably affected. The question of malignancy also arises, and, for this reason, it is probably unwise to attempt medical treatment of large gastric ulcers. They are less apt to cause obstruction than those occurring in the duodenum but are probably more apt to perforate. The x-ray shadow of a gastric ulcer is more apt to be the ulcer crater itself than in the duodenum, where spasm and scarring so frequently overshadow the ulcer crater.

The question often arises as to how frequently gastric and duodenal ulcers, being treated medically, should be checked by x-ray examinations. A re-examination three months after the diagnosis has been established shows the maximum to be expected from the medical treatment. Examinations at six-month intervals thereafter should be made until the patient is on a liberal diet, after which annual examinations are sufficient. The treatment can be supervised much more intelligently if periodic examinations are made.

Reference

1. Archer, V. W., and Peterson, C. H.: Unusual Duodenal Conditions as Demonstrated by X-Ray. *Va. Med. Monthly*, 1929, Vol. 55, 762.

705 *Medical Arts Building.*

## THE DIAGNOSIS AND MEDICAL TREATMENT OF PEPTIC ULCER.*

GEORGE B. LAWSON, A. M., M. D., F. A. C. P., Roanoke, Va.

Peptic ulcer is found three times more frequently in men than in women. It occurs at any time of life but rarely in the very young. Its apparent frequency depends on the skill that is used in the diagnosis and at times on the enthusiasm of the investigator. Duodenal ulcer is said to occur four to eight times more frequently than gastric. In our own cases the disproportion is apparently much greater or we are failing to diagnose our gastric ulcers.

When the patient comes for relief, he has usually had trouble for a year or even as long as ten years. The symptoms are frequently very typical; burning, boring cramp-like pains in the epigastrium coming on several hours after eating and lasting until the next meal, or relieved at any time by food or soda. This pain may be mild or it may be severe, and it may come on at various intervals after meals. Sometimes it may come on only in the morning and not in the afternoon, or *vice versa*, but the time of coming is usually regular. It does not come on so frequently after supper. The pain frequently comes on after midnight and lasts several hours. The pain may radiate to the back and sides. Some of our patients complain of sour belching.

This daily cycle of symptoms usually lasts a few weeks with intermissions of several months to a year or more, this periodicity of recurrence being very typical. If the symptoms are severe there may be no intermissions.

It is thought that the pain in gastric ulcer may come on sooner and leave before the next meal, but the diagnoses that we have made with this in mind have been shown by the X-ray to have been wrong.

Frequently ulcers are found in the routine X-ray examination although the symptoms are indefinite and atypical. Rather often ulcers are found post-mortem when their presence has not been suspected during life.

There may be a history of vomiting in many of the cases and, according to Crohn, vomit-

*Read before the Roanoke Academy of Medicine at Jefferson Hospital, December 5, 1932, as part of the Symposium on Gastric and Duodenal Ulcers.

ing, like painful cramps, constitutes a determining factor in favor of the organic origin of the complaint. Sometimes the pain is worse when the patient lies on his back. Constipation is found rather frequently.

The marked distress from perforation may be the first thing that brings the patient in contact with the physician, yet, there is usually a past history of digestive disturbance. Occasionally a severe haemorrhage may be practically the only symptom of ulcer, and there may be no vomiting of blood—merely collapse with marked pallor, followed for a few days with tarry stools.

We must remember that very many conditions aside from the stomach may give marked gastric symptoms, and for this reason a very accurate history should be taken and a thorough general examination made.

The examination may show a small area of tenderness high in the epigastrium or a trifle lower and to the right but not so far out as the gall-bladder area.

The fractional test meal will generally show high free acid, yet the acid may be low or even absent, especially in the gastric type. Other conditions than ulcer, such as nervousness, may give high acids, yet, in spite of this, the test meal is of much value and helps to round out our information. Since the X-ray has become so helpful we do not lay as much stress on the test meals as we should. Occult blood increasing during the progress of the meal or if more than a trace indicates an organic lesion. The finding of blood in the stool is of value if other causes may be ruled out.

A few cancers of the stomach may run a high free acid. One of our cases with high free acid showed post-mortem a large carcinoma of the fundus.

Food residue found in the morning fasting stomach indicates a pyloric obstruction.

Since the treatment of ulcer will put the patient to rather much inconvenience, we should be as certain of our diagnosis as possible. The assistance of a good Roentgenologist is exceedingly helpful.

The surgical treatment of ulcer usually gives quicker and more permanent relief than the medical treatment, but at times leads to much humiliation. Dr. J. M. T. Finney[1] says: "One word as to surgery, personally, I approach a surgical operation for the relief of duodenal or gastric ulcer, it is more true of duodenal than gastric, with less assurance of success than any other major abdominal operation, barring cancer."

The medical treatment of ulcer is most satisfactory at times and at times most disappointing; however, except when perforation or abscess is present, a very thorough medical treatment should be first tried.

There are many methods of treatment and the one originated by Dr. Sippy,[2] is probably the most used. If possible, the original article should be consulted. I shall quote a part of it in detail: "Briefly stated, the patient remains in bed for from three to four weeks. Unless some serious complication is present, some or all of his regular work may be done at the end of four or five weeks. A wide variety of soft and palatable foods may be given. The following plan of diet has been found most adaptable: Three ounces of a mixture of equal parts milk and cream are given every hour from 7 A. M. until 7 P. M. After two or three days soft eggs and well-cooked cereals are gradually added, until at the end of about ten days the patient is receiving approximately the following nourishment: three ounces of the milk and cream mixture every hour from 7 A. M. until 7 P. M. In addition, three soft eggs, one at a time, and nine ounces of a cereal, three ounces at one feeding, may be given each day. The cereal is measured after it is prepared.

"Cream soups of various kinds, vegetable purees and other soft foods, may be substituted now and then as desired. The total bulk at any one feeding while food is taken every hour should not exceed six ounces. Many of the feedings will not equal that quantity. The patient should be weighed. If desired, a sufficient quantity of food may be given to cause gain of two or three pounds each week.

"A large variety of soft and palatable foods may be used, such as jellies, marmalades, custards, creams, etc. The basis of the diet, however, should be milk, cream, eggs, cereals, and vegetable purees.

"The practice of maintaining an absolutely accurate control of the free hydrochloric acidity during the entire time that food and the accompanying secretion are present in the stomach has become thoroughly established. This requires the administration of varying quantities of alkalies, corresponding to individual cases. Also, in addition to giving an alkaline powder midway between feedings, the powders are continued every half hour after

the last feeding, until 10 P. M. In all cases of pyloric obstruction from duodenal and pyloric ulcer it has been found advisable to empty the stomach of all remaining food and secretion at about 10:30 P. M., thus removing the stimulus to an excessive night secretion.

"Cases of stomach ulcer unassociated with stagnation of food and secretion are usually controlled by feeding every hour and giving a powder containing ten grains each of heavy calcined magnesia and sodium bicarbonate, alternating with a powder containing ten grains of bismuth subcarbonate and twenty or thirty grains of sodium bicarbonate midway between feedings. Cases of pyloric and duodenal ulcer that have been associated with stagnation of food and secretion longer than two months almost invariably require larger quantities of alkalies."

The objections to this treatment are, first, the tongue may be excessively coated and the patient lose his taste for milk. Second, the large amount of alkalies may cause alkalosis, with the following symptoms: headache, nervousness, drowsiness, prostration and even coma, and the urine may show casts and albumin. Fortunately we have never had this complication. Third, the frequency of feeding gives a great deal of trouble.

Some workers believe that it is not necessary to use the alkalies at all. Frequently, I see patients in whom the pain is not relieved by milk, but get almost immediate relief when magnesia oxide is given. The alkalosis may be relieved by allowing a more liberal diet and stopping the alkalies. If the milk is too tiresome we may substitute raw eggs, orange juice and milk in equal quantities, or buttermilk not too sour with cream, cereals or even solid foods. The most important part is the frequent feeding. With several patients even canned sauerkraut has been very soothing and helps to get rid of the milk coated tongue. We have tried sodium citrate in a few cases to prevent the large curds of milk. We have made the patients much more comfortable by the use of a mixture of belladonna, bromides and choral. With many of our ulcers we use about ten to twenty grains of heavy calcine magnesia oxide between the feedings and, if this makes the bowel too loose, ordinary cooking soda may be substituted. One of our patients, in whom surgery was not suitable, got only fair relief from even a long time of the ordinary treatment. The symptoms were greatly relieved by having him take one-third teaspoonful of alum dissolved in water on an empty stomach three times a day. The successful treatment of ulcer requires skill, close attention and patience, and is not merely a mechanical carrying out of set rules. Focal infections should be corrected.

Some gastroenterologists start their treatments with several days starvation, using the glucose drip by rectum; some use an exclusive gruel diet for the first several weeks; others use a high fat diet consisting of olive oil, unsalted butter, yolk of eggs and cream, believing that these are not digested in the stomach and therefore do not increase the acid. Probably we can more wisely use any particular diet if we have a working knowledge of the other diets. Sometimes the patient is in such a position that he cannot stop work. In such cases we may get fairly good results by allowing three good meals a day and some feedings between meals, not allowing the patient to go over two hours without food, and also some alkalies can be used between feedings.

The intramuscular injections of foreign proteins has been used abroad. Lately in this country Martin[3] and others have carried out this plan by injecting 10 c.c. of sterile fat free milk (such as is put on the market for desensitization) every other day for seven doses. This is done without dieting or other forms of treatment. His results have been very good, even apparently curing three out of four cases of marginal ulcer.

Various observers estimate as high as 70 per cent of cures from medical treatment. I am sure that my own results are not this good. Personally, I believe it is very hard for any man or group of men to correctly evaluate their own results. This number of apparent cures is much lower when the patients are followed over a longer period of time. Any peptic ulcer, whether apparently cured by medicine or surgery, is always a potential ulcer and in either case, although there is an apparent cure, the patient should take care of himself for a number of years. It seems to me that the physicians do not lay enough stress on this after-care, and so many times patients come back with recurrence of symptoms and admit they have not followed directions.

He should be kept in as good a condition as possible by some moderate exercise, regular habits, avoiding worry and excesses. If possible he should have a little rest after the midday meal. He should as far as possible

avoid the afternoon fatigue. Regular sleep should be gotten and he should have at least one feeding, preferably milk, between breakfast and dinner and dinner and supper, and constipation should be avoided, yet, discretion must be used or the patient may become a neurotic. Even though the patient is free from symptoms it is better that he occasionally consult his physician.

If after a thorough medical treatment the patient still has symptoms, he may prefer to carry on with some discomfort, using treatment irregularly as happens with so many patients, or he may prefer surgery. Personally, I like to let the patient decide this after the matter is thoroughly discussed. Also in deciding this we must consider the skill of the surgeon to whom the patient may have access. We must remember that duodenal ulcers never become cancerous and it is rare to have perforation in a patient having only a fair amount of treatment.

The percentage of gastric ulcers that become cancerous is still a matter of dispute. Some very evident cancers of the stomach have been resected with permanent cures. A rather large number are reported from the Mayo Clinic.[4] From some of the other large clinics, even with unexcelled surgery, the number of cures can be counted on one's fingers. These cures have given a great impetus to gastric surgery. Some surgeons believe that practically all gastric ulcers should be excised. Some even advocate that any persistent gastric symptoms in a person over fifty is sufficient cause for operation.

The matter is summed up very soundly by Lahey[5]: "However, the position that because a patient has a lesion in which this percentage of malignancy occurs (6 to 10 per cent) all gastric ulcers should be resected, is not a proper one. Furthermore, the policy that patients with such gastric ulcers should be explored to determine the presence or absence of malignancy is not a proper one, since exploration will not reveal this desired feature. Exploration in chronic gastric ulcer reveals only the indurated ulcer, and it becomes almost imperative that a surgeon resect such cases once the abdomen is opened, since his conscience will not permit him to close the abdomen of a patient with an uncertain but potentially malignant lesion. If, now, all gastric ulcers are resected, or explored, and then resected, it is our opinion, based upon our experience now with eighty-one gastric ulcers, 83 per cent of which have been healed medically, that many patients will have been needlessly operated upon, and of this number, certainly, a few will have died needlessly."

We believe that all gastric ulcers which are not probably cancerous should have thorough medical treatment. If the lesion is not improved, as shown by the X-ray, and if occult blood persist, we may consider the lesion malignant or intractable and should operate; also lesions in the posterior wall rarely do well with medical treatment.

Patients with suspected perforation should be placed immediately in the hands of a surgeon. The internist may be of value in helping to rule out coronary thrombosis, haemophilia, purpura, tabes, but the one in charge of an acute abdomen should be the surgeon. Lately Singer and Vaughan[6] showed that if a perforation is not seen until after twenty-four hours and the symptoms are receding he will do better without operation, but this should be decided by the surgeon in each case.

When there is a massive haemorrhage the patient should be kept quiet, using morphia if necessary to control the restlessness. It is rather a common practice to keep an ice cap on the upper abdomen. Some gastroenterologists start feeding on the first day, using gelatine, but probably it is better to withhold food for three days and then use egg albumin or even the regular Sippy diet.

Rectal drip, or plain tap water, or 3 per cent glucose, may be used to control the thirst and prevent dehydration.

If the haemorrhage has been severe or continuous so that the patient is greatly weakened, I believe it better to use transfusions of carefully-matched blood, although some workers believe this may cause the bleeding to start afresh due to increased pressure.

Sometimes in spite of everything we can do, the bleeding continues and the patient becomes much worse. Under these conditions operation is advised by most surgeons; yet the mortality rate with operation is high, but the outlook is bad without operation. This question must be further studied.

Recently a very excellent surgeon discussed the advisability of operating on these acute cases. He said, "never do it unless it is absolutely necessary and then don't do it." Recently some gastroenterologists have washed out the stomach in the massive haemorrhages,

and report excellent results with a very low mortality. The patient and physician may be very much frightened by so much blood, but we must remember the death-rate is very low, even down to 2 per cent. The haemorrhage may re-occur at intervals of a few months or a year or so. Death rarely occurs in any but the first haemorrhage; however, a patient with recurrent haemorrhage usually does not respond very well when treated medically, and for this reason it may be best to operate, choosing the most opportune time.

If there is marked pyloric obstruction, we have obtained good results in a number of these by washing out the stomach, giving hot water and soda or magnesia frequently, and not allow any food for several days, at the same time using a 3 per cent glucose drip by rectum. These obstructions frequently clear up completely and then we may start the patient on the usual treatment. Some workers consider such a patient as necessarily surgical, but I do not believe so. Of course, if the obstruction is not relieved, then surgery is necessary.


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## SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.*


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In considering the Surgical Treatment of Gastric and Duodenal Ulcers, only two facts seem to be definitely established in my mind at the present time. The *first* is that we do not know the *cause* of these ulcers, and until we do, the proper cure will remain somewhat of a mystery. The *second* is that the surgical treatment is only an incident (though often a most important one) in the medical management of these patients.

The *cause* of these ulcers has been considered from the earliest of time, and *why* the gastric juice does not digest the stomach wall has been the subject of discussion as long as philosophy has been known. Of particular historical interest to us in America is that Beaumont's chief objective in studying the physiology of the stomach through the hole that had been so conveniently made in the stomach of Alexius St. Martin, was to find the answer to this riddle. Of course, many interesting theories have been advanced, but the multiplicity of the same indicates that the real solution is as yet unknown.

For a long time it has been known that ulcers could be easily produced in animals but these ulcers tended to rapid healing, and it is apparently impossible to make such ulcers become chronic. This would certainly suggest that there must be some association between ability of the stomach to prevent its wall from being digested and the difficulty of making ulcers, which have been produced experimentally, take on a chronic stage.

Certainly all possible focal infections should be removed if their removal is practical, and this should be done before any extensive operation is considered, unless the patient's condition is such as not to permit of delay. It is possible that there is some definite relationship between abscesses of teeth, tonsils, etc., and "peptic" ulcers, but, in recent years, many physicians and dentists are inclined to give more consideration to the proper occlusion of the teeth so that the food can be properly prepared, than they have been to the theory of association of focal infection and "peptic" ulcers. There is every reason for the correction of all of these possible associations in every patient whether he has a "peptic" ulcer or not.

During the past few years the belief in the theory of association of nervous and psychic influences has been gaining ground, and every surgeon should give such serious consideration in giving post-operative instructions to his patients along these lines.

It has been noticed that the patient who is quick, nervous and "temperamental" is more apt to develop a post-operative jejunal ulcer than the more quiet type. It has been suggested that this might be the reason why Berg at Mount Sinai unconsciously advocates resection of the stomach in preference to the more simple

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and less dangerous operations, for many of his patients are probably of this "nervous" type.

It has been definitely demonstrated that frequent small feedings after gastric operations are helpful in preventing jejunal ulcers, and this fact should also be stressed to patients before they leave the hospital after any gastric operation.

Of course, there are some acute conditions, such as perforation of the ulcer, repeated hemorrhage, etc., which preclude the possibility of pre-operative medical care, but, as a general rule, these cases should not be operated on until some good medical man has determined that he needs the assistance of a surgeon, and, even then, the surgeon should be certain in his own mind that the operation is definitely indicated. I know of no cases that are more miserable, or for whom less can be done, than those cases on whom ill-advised gastric surgery has been done.

Although this is not the place to discuss the methods of doing the various types of gastric operations, permit me to state briefly what I believe to be the indications for certain types of procedures.

Any operator doing this type of work should certainly be familiar with the various methods of performing the different types of operations, and the indications for each of the same. He should certainly not allow his enthusiasm for one procedure to blind him to the advantages of other methods when such are indicated.

If the lesion is a gastric ulcer, it should be excised (preferably with a cautery). It is frequently necessary to add either a pyloroplasty or a short loop posterior gastro-enterostomy to the excision of the ulcer—this is especially indicated where there is any obstruction at the pylorus. Each case should be an individual, separate problem and if the ulcer is larger than a twenty-five cent piece the chances are that it is a carcinoma and demands a wide resection of the stomach. It is needless to add that microscopic examinations should be made of the ulcer immediately after its removal and before anything further is done, so as to determine the advisability and necessity of resection. One should keep in mind that the chance of a carcinoma developing on the gastric side of the pylorus is far greater than on the duodenal side. For this reason, it is advisable not to delay too long before advising surgical assistance when one has determined by the X-rays the exact location of the ulcer to be on the gastric side of the pylorus.

It is estimated by Maes that "positive radiologic diagnosis varies from 60 to 75 per cent, and in 20 to 25 per cent of the remaining cases the findings are so strongly suspicious as to be almost positive, so that this method, when wisely used in combination with clinical observation, is obviously the most accurate one at our command." If we are to make any improvement in reducing the mortality in cancer of the stomach, the medical man must turn over to the surgeon the suspicious gastric ulcer cases which do not respond to intelligent treatment early, for a large proportion of such cases will turn out to be early malignancies, which give the best results after gastric resection.

There is an excellent editorial on the subject of Gastric Cancer and Ulcer in the *Journal of the American Medical Association*, November 26, 1932, page 1,864. To any one interested in this academic question of "primary carcinomatous ulcer" *versus* "carcinoma or ulcer," the careful pursual of this article will prove most interesting and instructive.

On a few occasions I have been tempted to operate on patients who had actively bleeding gastric ulcers, and who looked as if they were almost dying from loss of blood. However, I have never as yet yielded to this temptation and I am glad to say none of these cases died from the effects of hemorrhage. Most of these cases, however, had later some type of gastric operation before they obtained relief of their symptoms. This experience is somewhat contrary to that of some physicians who seem to believe an active and profuse hemorrhage from a gastric ulcer is the beginning of a cure. This might be true, and if it is, I feel that these patients are so badly frightened that they become willing to accept medical treatment more seriously than they did before they had such an impressive experience.

When a gastric ulcer heals the scar is not apt to contract enough to produce any obstruction at the pylorus, but with an ulcer in the duodenum this is not the case, and this is one of the reasons why a healed duodenal ulcer frequently presents a mechanical problem which can only be relieved by surgical assistance. One cannot rely on the size of the ulcer as determined by the X-rays, and use such changes as a criterion to judge concerning the healing process of the ulcer, for, even if the

ulcer heals, there is a deformity left which gives very much the same X-ray finding as existed while the ulcer was active. The following are definite indications for surgical assistance when treating a duodenal ulcer:

1. When the ulcer or the scar formation produces sufficient obstruction to have a 20 per cent retention of the barium meal in six hours. This test should be repeated at least twice, with an interval of a month.
2. Repeated hemorrhages.
3. Failure of relief of symptoms after sufficient and intelligent medical treatment.
4. Economic considerations and living surroundings.

The type of operation to be done depends on the actual condition of the duodenum and surrounding structures when the surgeon directly examines that locality. Extensive resections are not justified in the vast majority of ulcer cases, for such a procedure carries with it a higher mortality, and equally as good, if not better, results can be obtained by less hazardous methods.

It is interesting to learn of Walter's and Snell's explanations of the preference of European surgeons for gastric resection. In a comparatively recent visit to English and Continental Clinics, they were both impressed with the frequency of multiple ulcers around the pylorus—a condition seldom seen in this country. In such cases, it is reasonable to expect a resection to be the procedure of choice in Europe.

In the early days of gastric surgery many operations were done for almost "microscopical ulcers," as well as a general gastroptosis, and these ill-advised attempts at relief brought discredit, to a certain extent, on gastric surgery.

Of course, the aim of every surgeon is to return the organs to as near normal as possible, and surgery of the duodenum is not an exception to the rule. Unfortunately, conditions at the pylorus are frequently such that such an aim is impossible of accomplishment. When such a situation exists, then indirect methods of attack must be employed. In other words, I believe in some type of plastic operation where such is practical. I, personally, naturally am more familiar with the Finney pyloroplasty, and perhaps am therefore more partial to this type of plastic repair. There are, of course, many modifications of this type of operation—all of which are applicable in some cases.

It is interesting to note in visiting various clinics the increase in percentage of some type of plastic operation on the pylorus and duodenum. Usually such plastic operations permit removal of the ulcer. Of course, the chief advantage of a plastic operation is found in the fact that the gastric contents are thrown into that portion of the alimentary canal constructed to receive such, and not into the jejunum, which is accustomed to receiving food, etc., after it has received bile, pancreatic juice, etc., from the duodenum.

Unfortunately, only a small percentage of cases permits of a successful plastic procedure, and in the majority of cases the surgeon is forced to do the indirect operation of posterior gastro-enterostomy. Fortunately, however, the results of this operation are so satisfactory that no great harm has resulted. The one serious sequela of this procedure is the production of jejunal ulcers, and when this occurs, the experienced surgeon is taxed to his limit. The occasional operator has no business tackling such a proposition.

The two most important methods of preventing this occurrence is as follows:

1. Be sure the opening of the gastro-enterostomy is so placed as to assure the diluting of the gastric contents by the mixing of the duodenal contents as early and quickly as possible.
2. Stress on the patient the necessity for the continuation of medication and intelligent supervision by his physician. The best method of doing this is by a well-regulated follow-up system to remind the patient of the importance of continuation of care for at least several years.

It has been my unpleasant experience to operate on two patients, who have had previously an anastamosis made between the stomach and the lower portion of the ileum instead of between the stomach and the jejunum. This is mentioned simply to illustrate that even the gastro-enterostomy can be grossly abused.

There is no discussion as regards the advisability of surgery when a perforation has taken place, but there is some question as to whether a gastro-enterostomy should be combined with closure of the perforation. The location and type of the ulcer, the condition of the patient, and many other considerations will determine the answer to this question in each individual

case, but the main point which should be kept in mind is to save the life of the patient, and not add to the difficulties of his recovery.

This is not intended as a treatise on the surgical treatment of gastric and duodenal ulcers, but simply a very brief resumé of my own personal experience without yielding to the temptation to elaborate on any of the many interesting problems involved in a discussion of such a vast subject.

## THE UNSOCIAL SCHOOL CHILD: IS HE THE POTENTIAL DEMENTIA PRAECOX?

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Society pays little attention to the unsocial individual until his behavior clashes violently with accepted standards. Not until then does it consider treatment. The following case is illustrative:

John, age 15, was referred to a child guidance clinic by the public school because of persistent truancy. He had entered school nine years before and his behavior had been exemplary for eight years, his scholarship excellent for several years, then good, then fair, and, finally, he had lost all interest in school. Social investigation revealed that he had always been solitary, seclusive, unsocial, no playmates at home or in the neighborhood, and never participating in games or other play on the school playground. At home he had been over-protected by his parents to the extent that his mother had accompained him to school each day until he was thirteen.

Examination at the clinic disclosed the fact that he had peculiar ideas about himself and the world. His phantasy life was abnormal. Finally, as he became more and more communicative with the psychiatrist, delusions and hallucinations were elicited, also, his intention to kill his parents if they continued to cross him. Further interviews with the parents revealed that the boy had made repeated threats to kill them; also, he had made up a list of other people he was going to slay. His parents said they had been afraid to express their belief that the boy was "crazy." They consented with some trepidation to place him in a mental hospital. The clinic's diagnosis, dementia praecox, was confirmed by the hospital.

The fact of unsocial conduct, or seclusiveness, in a child's make-up is of grave importance. It is out of such soil that the dread disease, dementia praecox (schizophrenia), arises.

The most important work of medical science today is learning how to prevent rather than how to cure disease. Yet medical literature contains a hundred articles on treatment to one on prevention. It is in recognition of this fact, and with the belief that if diagnosed and treated in the pre-school or school age, most cases of dementia praecox can be arrested or prevented, that we present this paper.

The condition known as dementia praecox, or schizophrenia, was formerly thought to be characterized by the presence of delusions, hallucinations, mannerisms, negativism, etc. It is now accepted that there are earlier and more fundamental manifestations of the disease (following the lead of Bleuler). They are certain characteristic alterations of thinking and feeling, and of the relations with the outer world. These are really the basic or fundamental symptoms, the delusions, hallucinations, etc., being merely accessory manifestations, representing adjustive compromises. The basic symptoms may appear as much as a decade before the delusions, hallucinations, or other accessory manifestations. For instance, if the case just cited had received clinic study nine years before when his unsocial conduct should have been noticed, it would have been possible to recognize the earliest signs of dementia praecox. The child could have been given suitable treatment and probably saved to his parents and society.

Formerly, it was thought that dementia praecox was incurable, and all that one could do was to make a diagnosis and then helplessly watch the inevitable deterioration and regression to a state resembling idiocy. A similar fatalistic attitude towards tuberculosis was universally prevalent some years ago, but now it is recognized that tuberculosis may be diagnosed in its incipiency, and either "cured" or arrested. So also with dementia praecox. The phthisic diathesis and underweight in children as an aid to the prevention or early diagnosis of tuberculosis probably has its analogue in unsocial and seclusive traits as an aid to the diagnosis and prevention of dementia praecox.

With the rise of pediatrics, there has developed an increasing body of knowledge regarding the early diagnosis of tuberculosis in

children which has contributed greatly to the success of the anti-tuberculosis movement. It is likewise true that because of the spread of child guidance clinics, the psychiatrist has had greater opportunity to observe children over a period of years and accumulate a fund of knowledge which has changed our concept of dementia praecox.

Opportunities for observing unsocial children have been afforded the writers of this paper during the past eighteen to twenty years, by contact with children in private practice, in clinics at the Medical College of Virginia dispensary, in the juvenile court, and various correctional institutions, in sanatoriums, state hospitals, and in several child guidance clinics, including the Children's Memorial Clinic, of Richmond, Va.

It seems to us that the unsocial child who shows early symptoms of dementia praecox may be (1) over-active and obtrusive, or (2) under-active and unobstrusive, with some overlapping of symptoms. (In some cases the two groups may represent different phases of the same process.) The following symptoms may typify the first group:

Incorrigible, beyond all ordinary control; cruel to younger children and animals; not influenced by punishment; cannot be reasoned with; stubborn, ugly-tempered; seldom makes normal contacts; is the object of fear or ridicule in play groups, "goofy," "sissy," etc.; evades reality by persistent truancy, running away from home repeatedly, dodging home duties; backward in studies and is thought by teachers to be feeble-minded, but does not show appreciable retardation when intelligence tests are applied—may appear normal or superior on such tests.

The second group is seldom noticed by the teachers or others as the child superficially conforms and because of "goodness" is not thought to be a problem. The symptoms exhibited may be as follows:

Quiet, solitary, seldom or never taking part in play with other children; difficult to know, but when he does talk reveals an extraordinary phantasy life; lacking energy and appearing lazy; the "queer" and "different" child in the family, with bizarre ideas and may have a morbid interest in sex, religion, and disease; spends much time in day-dreaming and other escapes from reality; in school pays little or no attention to discussions which interest the other children; often makes irrelevant answers to questions; may for a time be a brilliant student and cause the teacher and others to think he is destined for a great career; may be shy, timid, with many fears; may be sly, sneaky, and suspicious.

The case of twin sisters who developed dementia praecox may serve to illustrate the two groups. The heredity was poor; the home offered little security. Polly, the over-active twin was difficult to control and frequently caused disturbances in the class-room. She annoyed the other children and seemed to care for no one except her quiet sister, Effie. Both children had superior intelligence, according to psychological tests, but Effie received higher marks than Polly on scholarship as well as deportment. Shortly after graduation from high school Effie had a "nervous breakdown," attributed to over-study. Not until she had developed delusions, hallucinations, and other signs of a frank psychosis was she committed to a state hospital. Diagnosis: dementia praecox. Polly secured a position as stenographer at which she worked for a year, then became conspicuous for perverted sex activities, lost her position and left town. She wandered about from place to place for several years, meantime regressing in the economic scale. Finally, she returned home and caused so much friction that her family had her placed in a sanitarium for observation. After six months' observation she was committed to a state hospital. Diagnosis: dementia praecox.

The following cases, diagnosed as dementia praecox, and committed to institutions, indicate the lapse of time which may occur between first noting basic symptoms and the appearance of accessory manifestations:

| | | *Basic Symptoms Noted* | *Accessary Symptoms* | *Yrs. Time Int.* |
|---|---|---|---|---|
| Case I. | E. M. | 1916 | 1926 | 10 |
| Case II. | B. J. | 1919 | 1927 | 8 |
| Case III. | R. L. | 1925 | 1933 | 8 |
| Case IV. | G. W. | 1919 | 1929 | 10 |
| Case V. | C. H. | 1925 | 1932 | 7 |
| Case VI. | C. A. | 1925 | 1932 | 7 |
| Case VII. | P. B. | 1931 | 1933 | 2 |

The only case of this group to receive early treatment was Case VII, and there was poor cooperation by the parents. In the other six cases, a tentative diagnosis of incipient dementia praecox was made, advice given, but the patient apparently received no treatment until the symptoms had become so aggravated that

the case had developed from a family problem to one that concerned the community.

Out of a group of 160 unsocial children studied and treated during a period of one to nine years at the Children's Memorial Clinic, six have exhibited accessory symptoms sufficiently grave to justify institutionalization. Three of the six were already presenting some accessory symptoms when first examined at the clinic. The younger children of the group now under treatment seem to respond more readily to improvement in their environment and management at home, school, and in the community. This improvement is most marked in cases where there is parental cooperation. In some cases, however, unfavorable factors are so deep-rooted in the personalities of the child's parents or guardians that treatment is exceedingly difficult, and the prognosis not so favorable. As yet this study is relatively superficial, but sufficient data is available to show the needs of further study and the value of continued treatment over a long period of time.

As Dr. Stevenson, of the National Committee for Mental Hygiene, says, "The study of psychoses and their beginnings has revealed childhood as the period of hope and prevention, the period for refinement of the mental fabric. Such study has shown the weaknesses of this fabric and the opportunities for prevention."

The mounting cost of mental illness is well known. The amount spent in prevention is infinitesimally small in proportion to the cost of hospitalization. One-half the hospital beds of the United States are filled with mental patients. Forty to fifty per cent of the mental patients in such institutions are afflicted with dementia praecox. Surely it is high time to give impetus to the movement toward early diagnosis and treatment of mental disease, especially dementia praecox.

Members of the child's own family and neighborhood associates have the first opportunity to discover the unsocial child. Next come the family physician, the pediatrician, and then the school. The first opportunity for a comprehensive survey comes with the child's school experience. There is a need of mental hygiene courses for parents and teachers, less laxity in the teaching of psychiatry in medical colleges, and a wider knowledge of the value of preventive measures in mental hygiene as well as other fields of medicine.

The early diagnosis of mental disease may be furthered by referring all unsocial children to the nearest psychiatrist or mental hygiene clinic which examines and treats children. The clinics available in Virginia are as follows:

Mental Hygiene Clinic, University of Virginia. for Charlottesville and vicinity; the State Mental Hygiene Clinic, Richmond, available to all save the city of Richmond and county of Henrico; the Children's Memorial Clinic and the Medical College of Virginia Dispensary, which serve the city of Richmond and Henrico County. A list of approved psychiatrists, neuropsychiatrists, and neurologists may be obtained by communicating with Dr. William F. Drewry, Director, State Bureau of Mental Hygiene, 11 South 12th Street, Richmond, Va.

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## MEDICAL AND SURGICAL REMINISCENCES.*

E. W. P. DOWNING, M. D., Franktown, Va.

Foreword

The author of the following article is a gentleman whose experience in general practice extends over a period of many years. His activity of mind, activity in his daily visitation to patients, and his application of art in practice serves as a stimulus to all who know him. In the early days of his prac-

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tice, difficulties were presented which would now seem insurmountable. The germ theory was in its infancy, antisepsis was crude, anaesthesia was still limited in its application. Travel was very difficult, there being times when a two-wheel sulky could scarcely be gotten over the roads. Hospitalization was well-nigh impossible, the more so in Northampton County, because of its isolation from the "Western Shore."

It seems remarkable to me that a man practicing in those days should have had the foresight to apply principles which are on the whole even today modern. Some of his readers will undoubtedly disagree with certain points of that practice The paper is presented, however, in the true spirit of the scientist, putting down truth of what was done without fear or favor.

W. C. H.

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Removed left testicle from William Stakes Nedab, Belle Haven, as large as a large fist. We supposed it tubercular. Result perfect and permanent.

Bow legs: Operated on a case of bow legs and boiled my chisel and knife in a towel and gashed the skin and placed the chisel in the cut on the outside of thigh parallel with the long axis and drove it down to the bone with a boiled lead mallet. I then turned it crosswise the bone and cut two-third through it. I then straightened the bone and put on plaster splint. Next day fever was 104. I went home wondering how soon I would have a corpse. The day following she developed a case of measles. She has good normal legs now.

Mrs. P. T. had Bright's, curdled to top of urine like clabber; she was restless, moving from sofa to chair and to bed in rapid succession and, besides palpitation, had asthma so as to preclude sleep. She was immensely swollen with a general dropsy. I gave Da Costa's heart stimulant to relax the capillaries so as to relieve asthma by allowing the capillaries of the lungs to take in oxygen and cast off carbon dioxide. I then ordered a warm bath with soda and after a rub down she went to sleep. We then gave her benzoic acid and borax mixture and milk diet. She steadily improved and in three weeks was entirely well. She had valvular heart disease like her mother and when the dropsy went down she was a pitiful object. Her skin hung in folds about her arms, and her face was wrinkly and thin. She remarked that if I would give her something to plump her up she would ask no other favor of me. In three months she was fat, rosy, and healthy. She remarked after she recovered that she was going to die like her mother in a thunder storm of fright. Ten years later she died during a terrible thunder storm. She was well up to that night as far as symptoms were concerned.

N. B. had a son with Bright's. He was very dropsical as well. He had measles and remained well ever after.

Aunt M. Y. had Bright's and dropsy when twenty-four and lived to eighty-three. She died of other causes. I remembered her one rule of health which was not to eat unless you really wanted to and she practiced it especially when sick.

Another case, M. S., was like the first as far as coagulating to the top and dropsy were concerned, but her heart was sound. She was very near death indeed. Suspecting syphilis, I gave mixed treatment and straightway she recovered and is now living and well. Really I find syphilis quite prevalent and even find cases with a negative Wassermann. One or two cases gave three straight negatives before a full three or four plus.

Dr. Hyslop and I operated on L. H. for fissure. It was a typical one, posterior to anus, slick, shiny, three-fourths inch deep, by inch long. His main complaint was hemorrhage and he was exsanguinated. We put him to sleep and dilated the sphincter, tearing the fissure deeply. He resumed work next day and so continued without pain or hemorrhage. In connection with this rectal work, I may mention that I've gotten great satisfaction from boiling a large urethral sound and applying that to internal hemorrhoids through a large Kelly Sphincteroscope, just taking the sound out of the hot water and applying with gentle pressure to the hemorrhoid. Bleeding hemorrhoids I have never tried with sounds but used clamp and cautery. I found one rectum whose walls were covered with polypi, an inch long like spaghetti. They gave much trouble; so I burned them off gently and carefully as the whole rectum contained them and got good and permanent results.

While I was removing a three-pound tumor from the inner side of a woman's right thigh and slipping over to her next door neighbor and cutting out and packing a fistula-in-ano, I received a message to hurry to a Mr. B. who had fainted in church from rectal hemorrhage and, finding the hemorrhage checked, I made a date for the following day and found a fibroid the size of a hulled walnut and pedunculated. It bled very freely on the least touch.

I threw a double silver wire loop over it and twisted it till it turned blue and then bent the wire and stuck it in the tumor. It came away on the eleventh day with the wire. He had been suffering since his seventh year and now he was over sixty. Perfectly well since.

A man at Exmore had what he called piles. He had had them several years. He claimed his doctor said he was suffering from fistula and that he would have to operate. I examined him and found a large nail across the anus and buried in the tissues at both ends. I offered to remove it but he claimed he preferred to keep it. It eventually produced abscesses and a fistula and killed him. Professor Erich had a patient die from a beef bone across the anus. I saw an old man in extremis from raisin stems. They were removed and he recovered with marvelous rapidity.

I remember an old negro who ate watermelons, spat out the juice and swallowed the rest in order to cure the dysentery by scraping out the mucus. Well, he got blocked up with seed. When I drove up I thought he was dead. There were four turkey buzzards sitting on the roof and more circling around. The old man was standing with his head against the wall bent over and said he had not been abed for two days or more. After removing a half gallon or more of seed, he was comfortable, but I gave him three purgative pills to take at regular intervals and when I returned two days later he was coming to the landing with a basket of trout and gave me half dozen of them. I have had several similar cases and some cherry seed, but I think persimmon seed cases are rare, though my father had one.

I have found quite a number of intra-uterine fibroids, mostly the size of plums, which so far I removed successfully by twisting them out with strong clamp forceps. I removed from Mary Stevens a very hard round fibroid the size of an orange, post partum, after a child of seven months, with obstetrical forceps. She had high fever and rapid pulse before I delivered it and hung between life and death for two or three days afterwards. Eventually she completely recovered. In these small tumors hemorrhage was the prominent symptom.

The subject of cancer is a large one and with us the battle was almost hopeless. I gave chloroform and Dr. Floyd removed a cancer from the breast of Adah Collins. She had no return. Dr. Kelly removed one for one of my patients which was a permanent cure. I have cured many face cancers with Marsdin's paste. The majority of other cancers sank rapidly to death. And some of these cases were very sad indeed.

I now burn them out with high frequency and radium. I have one that radium was used on at the hospital here and she is still free and also one removed by knife with no return. I have seen only a few bone sarcomas and of course they were fatal. Dr. William L. Clark checked one on the left arm for ten or twelve years with radium but it returned fatally.

Empyemas: I have removed part of a rib and placed in drainage tubes three times for empyema and opened up between the ribs several more times for the same; all successfully.

I've opened up behind the uterus through the vagina several times for abscesses, tubercular peritonitis and ectopic pregnancy, all successfully. In opening up in an infected ectopic about the left ovary in a patient nearly moribund, I had such a gush of foul smelling bloody water as to really startle me, but got out quite a lot of blood clots and packed loosely with 5 per cent iodoform gauze. She rallied very nicely and recovered. A tubercular case was seen with Dr. Trower at Eastville and improved very nicely after operating. How she is now I do not know.

To change a little from the subject. I'm sure we have all noticed old cases of cervical trouble, endo-cervicitis, and so on, cured by applying cautery quite vigorously to the cervix. I've used cautery and high frequency with good results. I've noticed that high frequency will sometimes cure face cancers when radium has apparently failed.

C. J. Appendiceal abscess: Opened abscess and inserted two rubber tubes and sewed them in. We have had this operation to perform several times and always successfully.

C. J.'s daughter had caries of bone of leg. This child, eight years old, had caries of tibia. Operated on tibia, removing three-fourth of bone, leaving a strip down the back and put on splint. Complete recovery.

Colored girl shot through heart, 32 bullet. Cut it out of back after it abscessed several days later. Good recovery.

If you can help it, never attempt to deliver a baby unless the mouth of the womb is thoroughly dilated beforehand. Dr. Murat Willis reminded us of this and I fully agree with him.

Mrs. N. C. after a miscarriage had an infection with pelvic abscess in Douglas' cul-de-sac.

She was seriously ill when I saw her. I opened her behind the uterus and packed with iodoform gauze, and recovery followed with no complications.

I gave iodide of potash to Mrs. W. C. and finally relieved ovarian pains permanently.

In podalic version baby is often asphyxiated and ofttimes in other cases too. I wish to state, do not give up. Keep on with artificial breathing, warm water to keep heat up, and a cold rag on face once in a while or a slap on the back with it to arouse the baby, but don't forget to keep his temperature up.

M. S. had a very bad case of varicose veins of legs and they kept her continually knocked out with ulcers and hemorrhages. She was in bed with hemorrhages from a broken vein so I remarked that she was of no use at all and if she would let me tie her veins with catgut I would do so. I started at upper part of thigh with the saphenous, put in cocaine, cracked skin with knife and passed a needle under the vein and tied it. I went around at intervals down to the instep on both legs. It did not take long nor cause much pain and the result was perfect. We can now use procaine which is much better.

George Upshur's wife, Ella, had a very hard fibroid in the roof of her mouth so that she could not close it. She was put to sleep and the fibroid split in halves and shelled out with fingers very easily. Living and ninety years of age.

When I came home from college, typhoid was very prevalent and severe. The medical books of the day, Bristowe and others, had nothing adequate to meet the pathology. I asked my father what to do and he said, "don't let them get weak, feed them from the beginning. Put a pitcher of milk toddy in the chair and one of eggnog under the bed and give it to them." I did so and lost my negro playmate and several others. I was in a quandary. I piled all the medical journals I could get together in a room upstairs and read everything on typhoid. I found three classes who had good success with a very large number of cases. The cold bath of Brandt with 1,225 cases and twenty-five deaths, the purgative or Woodbridge treatment with 991 cases and small loss; and the antiseptic method. This gave me great freedom for action; so I bathed, gave salts, benzoic acid and borax mixture, and a reasonable diet. Charles E. Page, of Boston, gave no food during fever, quite the opposite of my father.

This reduced my mortality to about 2 per cent and changed the aspect of the cases. They rested, were not delirious, etc., nor very tympanitic.

Harry Mapp: Dr. Hyslop attended Harry Mapp and stated that he had typhoid fever so bad that his glands were all rotted out and that he could not have it any more. The following summer I attended him and had Dr. George Lecato as consultant. He was a very lucky man with typhoid. Harry was immensely tympanitic and I wished to give salts and antiseptics but the doctor said we would get no results and might have perforation or hemorrhage and besides he had a pulse of 120 and that he had never seen one recover who had a pulse that fast. He died three days later.

Out of my six hundred or more cases I will give one more example.

Now I had made up my mind that toxemia and ulceration were the main enemies to fight. Toxins could be swept out through the kidneys and the ulceration could be combated by salts, calomel, antiseptics, and a moderate suitable diet, like raw eggs, lemonade, orange juice, soups strained and well salted and peppered.

Hallie M., aged sixteen, white. Here we have a beautiful girl with a temperature rapidly rising to 108 in spite of a cold bath in ice water, snow being put in a huge bath tub full of cold water and four nurses to rub her while lying in the water for a full half hour and repeated every hour. Her pulse was 162 and respirations 68. Remembering Dr. George Lecato's assertion that he had never seen a case recover with a pulse over 120 and also thinking of Harry Mapp I was at my wit's end. She had rales in both lungs and pneumonia and was extremely tympanitic. I thought I would get her free from the gas on her stomach or tympanites and, incidentally, of some waste and sources of infection; so I ordered two grains of calomel every two hours for six doses and one dose of two heaping tablespoonfuls of salts and told Minerva to save each action separately. She saved all six of them. They looked like mother of vinegar, bloody water of horrible odor, and little flecks like very small pieces of flesh near of a size floating in the last three. The last one was wine-colored water. She now had a pulse of 127 and a respiration of 45 and her

temperature was 100 and she seemed to feel better and, the morning following the medicine, her pulse was better and stronger. She rested better and needed no baths for two whole days. Then we got into the same state of affairs again. We repeated the salts with the same results. For three days we needed no water and were up against it again and another dose of salts relieved us for four days but this time the baths kept the fever in control and she gradually went on to recovery.

George Webb had a lot of children with typhoid with high fevers and much bathing. I had Mr. Thomas Upshur for a nurse and he was a very intelligent man. Desiring to go to New York to study medicine, I put up a large number of capsules 00 size filled with salt and ordered one four times a day. This put them drinking and down went their fevers and I went on to New York, leaving them in Mr. Upshur's care.

Gonorrheal rheumatism: I opened knee of Lee Moses and let out a quantity of greenish pus. He recovered with a little stiffness for a while.

Woman at Shadyside had gonorrheal rheumatism in left knee. Had great swelling and horrible pains. Reading that gonococci were readily killed by high temperatures. I had her husband apply large Turkish towels wrung out of hot water as dry as possible from hip to foot from six to nine p. m. The pains subsided immediately, the swelling gradually subsided, and in a few days she was perfectly and permanently well.

I cut a floating cartilage out of the right knee of W. M., bandaged it and kept him quiet a few days and had no trouble since.

Fred M.'s wife, Belle Haven: One night when it was raining and blowing as hard as I ever saw it and the rain whipping the window panes in heavy flaws, I was called in an urgent hurry to see a confinement case. Two doctors were resting after a hard pull on the head with forceps. One had, as was his custom, retired to a quiet bedroom and seated himself in a comfortable rocking chair to smoke cigarettes and meditate. I examined her and finding an occipito-anterior and head well down and about to be delivered, I returned quickly to the bedroom and recommended the immediate application of the forceps by himself. He hesitated and tried hard to force the job on me but on my persisting he, being a gentleman by nature and breeding, consented and delivered very gently, skillfully and easily. The trouble was they applied forceps before the head had time to rotate.

B. R. Ocipito-posterior in a large, short woman. Three doctors and one trained nurse worked hard, honestly and carefully for two hours and a half without results except fracturing child's skull and bruising it so as to cause three abscesses on his head. (They were opened and the child grew to be a handsome normal man.) The child was quickly and easily delivered by pressing the handles well back and the blades up until they would lock readily and easily; then, when traction was applied, the occiput swept forward along the sacrum and was easily delivered.

I was called eleven miles one very bitterly cold night; the snow lay softly on the thin ice of the many mudholes and no four-wheeled buggy could make any headway on account of the cold wind freezing wet snow on the rims and spokes. I drove Daisy to a high wheeled trotting sulky. Capt. E.'s wife was having fits or eclamptic convulsions with her first baby. Next morning it had frozen harder and driving was better so we melted the ice off the wheels with hammers and hot water and drove home a little more easily. The next night I thought was the coldest I had ever experienced. I had a call five miles. I drove Daisy to a buggy and had trouble with twin girls and the mother also. One twin got chin locked on the other one in such a way that there was no progress; so I turned and delivered one and the other soon followed. I then removed the after-birth which was on the way. I had two napkins soaking in a glass of boiled vinegar on the floor. I went to the open fire place, which was roaring, to warm up if possible. While I was scorching one side and freezing the other, she called out that she wanted a glass of cold water. I gave it to her and immediately she asked for another. I gave her that. Then she said all was dark and that she couldn't see. I rushed to the bed and placing my hand on her stomach found it was as large as ever. I pressed on it and a gush of blood followed such as I have never seen before or since. She swooned pulseless in a cold sweat. I grabbed my two napkins and passing them quickly to the inside of womb I pressed down with the other hand and pressed the womb down on the inner hand and napkin till it shut down in a hard ball. I left the napkins and covered up and warmed up my unconscious patient. I re-

moved the napkins next day. Mother and twins did well.

Clara Jacob: When I began practice I had a patient, a large powerful negress, who delivered an eight-pound baby, back first. The baby was dead. They say that sometimes the head stays over the brim and the hand and shoulder are followed by the back and hips and last of all the head.

The biggest baby I ever saw was seventeen and one-fourth pounds, a girl, Mary Daughty, Hog Island.

Diphtheria: We have all noticed the treacherousness of diphtheritic paralysis. I took a pretty little girl's temperature and pulse and they were normal. She was standing in the middle of the bedroom. She drank a glass of milk. I asked her how she felt and she said, "All right." I said, "Does the milk hurt your throat when you drink it?" She answered, "No." I rode to Birds Nest to get antitoxin and when I returned half hour later she was dead.

The eight-year-old boy of Colbert Curtis was given 5,000 units antitoxin and promptly recovered. Four days later his involuntary respiratory nerves were paralyzed and he could not breathe and sleep at the same time. He was perfectly well in every other way, played, romped very actively and happily, but he died on the fourth day in his sleep without any pain or suffering.

I've had one or two more like this. I read in newspapers about a girl of sixteen who was sent to a hospital and artificial respiration performed for five or six days, for five or six hours at night, and recovered.

Cervices: I've seen many cases of stenosed cervices, some even in multiparae. Some caused severe symptoms, they were incised, dilated and intrauterine pessaries inserted. Saw one or two cases of lacerated retroverted uteri that caused constipation, indigestion, and nervous symptoms of grave character. Repaired cervix reduced; put in a pessary and a stem pessary. Now they are normal women.

I've cured a few cases of incontinence or dripping of urine in women, by simply dilating the urethra with sounds. Results were satisfactory to patients as they could not wear any drawers or go in society. In two or three cases of abscess of floor of urethra, I cut floor of abscess so it would not bag or hold any urine when patient was standing.

L. T.'s wife, Esther, was interesting in that uterus stayed retroverted except during pregnancy. She is the mother of nine children.

Three cases of poisoning by bichloride. F. F. took three tablets while drunk through mistake for headache tablets. I gave bread soda, milk and filled him so full of soap water that he vomited a stove full of soap suds. He recovered.

Girl at Willis Wharf took three tablets but she had a wise mother who sent for everybody and gave her plenty to drink and by running her fingers down her throat caused her to vomit and repeated until the water was clear and free of any blue dye.

I was the first doctor to arrive and gave her bread soda water and told her to drink water and milk and that she would get all right. She recovered.

T. B. I dropped a blue coffin-shaped tablet of bichloride in a dry cuspidor. A five-year-old boy picked it up and swallowed it very quickly for candy. I gave him soda water and soap water and, greasing a feather, tickled his throat, and produced vomiting. I repeated till clear of dye. He recovered.

Baby girl of fifteen months reached in a granny woman's antiseptic basin and ate her white bichloride tablet which she heard drop in the basin. The nurse, not perceiving, bathed her obstetric patient with pure warm water. The child was taken very ill hours later and died within twenty-four hours.

Space of Retzius: I have had two cases of abscess of the space of Retzius. The first was infection from a tonsillitis and was operated by Howard A. Kelly successfuly and the second a much worse one by myself. It was opened and packed under local anaesthesia and promptly and fully recovered.

Angiomas: I've treated by subcutaneous ligatures very successfully and also by applying sounds taken out of boiling water.

Burns: Mopping extensive burns freely with normal salt solution when the patient had high fever and was restless seemed to be of service in some desperate cases. Scraping granulations off and scattering fine dead skin or very small pieces of live skin has seemed to save scarring and hasten healing. One case I remember was that of a child who was nearly white and the father very black. The girl's back was covered with black spots an inch and a half in diameter, her daddy's skin. He was the only available donor.

## HIGH BLOOD PRESSURE: ITS CAUSES, SYMPTOMS, AND PRINCIPLES OF TREATMENT.*

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It is the purpose of this paper to point out some of the observations made by various investigators, and to classify hypertensive individuals so that some of their complexities may be clarified, which may help not only in rendering a more accurate prognosis of this disease, but also in its treatment.

### Normal Blood Pressure

What is normal blood pressure? What are its daily variations and the most common factors that influence them?

Insurance figures are unreliable in determining normal blood pressures, because they are of a selected group and the average blood pressure of those accepted is between 100 and 140. Alvarez in a study of fifteen thousand college freshmen found that the younger students reacted to excitement with an elevation of blood pressure, whereas the older students did not. Similar observations were made by him on six thousand prisoners and four hundred prison guards. The pressures were much higher in the guards than in the prisoners, and higher in those convicted for first degree murder than in those sentenced for minor crimes. He concludes that normal pressures range from 90 to 140, if the average of all classes of people is considered. He further states that age does not influence normal blood pressure, and that a pressure of 115 mm. is just as normal and a pressure of 140 mm. just as abnormal in an old man as in a young man.

George M. Saunders, in a study of blood pressure in Yucatecans gives the following table:

It has been shown by several investigators that the diastolic blood pressure rises a few years before the systolic. The pulse pressure (i. e., the difference between the systolic and the diastolic pressure) decreases between the ages of twenty-seven and forty-seven, which may explain some of the loss of circulatory efficiency during middle age.

Daily and monthly variations in blood pressure as studied by Brown, Mueller and Aymon show many interesting facts. There is a rise in blood pressure as the day progresses, with three definite rises during the day after each meal. In the early afternoon the pressure begins to rise, and by early evening it has reached its highest peak. During the first two hours of sleep there is a marked fall in blood pressure and by 4 A. M. it has reached its minimum in normal persons, but in hypertensive people the minimum is reached at 3 A. M. The blood pressure is lower in summer than in winter, and the minimum is during the months of August and September.

Perkins in a study of 801 cases of apoplexy admitted to Kings County Hospital during five years found that the number admitted was least in July, August, and September, and greatest in January.

It is interesting to note that there is a week-end variation, as on Saturdays, Sundays and Mondays the highest pressures are recorded and they do not reach a minimum daily variation until Tuesday or Wednesday. There is a daily variation in systolic pressure of a normal person from 15 to 65 mm., with an average variation of 36.5 mm. In hypertensive individuals there is a daily variation from 25 to 120 mm. Many similar observations have been recorded between these two extremes.

Aymon has shown that the diastolic varia-

Average Systolic Blood Pressure According to Various Authors

| Author | Place | Ages | Sex | Race | No. of Cases | Systolic | Diastolic |
|---|---|---|---|---|---|---|---|
| Woley | U. S | 15–60 | M | Amer | 1,000 | 127.5 | |
| | | | F | Amer | | 120.0 | |
| Norris | U. S | 15–60 | Both | Amer | 64,574 | 123.2 | 80.0 |
| Symonds | U. S | 15– | M | Amer | 150,419 | 127.6 | 83.5 |
| Alvarez | U. S | 16–40 | M | Amer | 6,000 | 128.9 | |
| | | | F | Amer | 8,934 | 117.3 | |
| Ashford | Puerto Rico | 15– | M | P. R | 250 | 114.3 | |
| | | | F | P. R | | 120.1 | |
| Torgerson | Puerto Rico | All | Both | P. R | 100 | 120.2 | 73.8 |
| Chamberlain | Philippines | 18–30 | M | Amer | 1,000 | 115.0 | |
| | | over 30 | M | Amer | | 118.0 | |
| Saunders | Yucatan | 15– | Both | Yucatecan | 1,066 | 119.9 | 73.5 |

*From the Medical Department, St. Elizabeth's Hospital, Richmond, Va.
Read before the staff meeting of St. Elizabeth's Hospital, Richmond, Va., January 20, 1933.

tion in essential hypertension is almost parallel to the systolic variation. He gives the following variations in three groups of cases:

| | Average Diastolic Variation on First Visit |
|---|---|
| 1. Those with blood pressure above 200. | 37.5 mm. |
| 2. With blood pressure between 160 and 200 | 32.4 mm. |
| 3. With blood pressure up to 160 | 22.5 mm. |

The minimum variation was 5 mm., the maximum 66, and the average 30. The same group studied after rest in a quiet room shows a minimum of 8 mm., maximum of 70, average 37.

Group 1—Diastolic variation 43.5.
Group 2—Diastolic variation 37.5.
Group 3—Diastolic variation 30.

Korns and Guinand in studying the blood pressure taken simultaneously in both arms of one thousand healthy persons, whose average age was twenty years, found a great difference which was not explained. In 19.3 per cent of the cases they observed the pressure was greater in the right arm: in 2.9 per cent the pressure was greater in the left arm. In 12.7 per cent the minimum diastolic pressure was greater in the right arm; in 9 per cent it was greater in the left arm. In most instances the differences were greater than 11 mm. of mercury. Of 439 instances of inequalities in 378 individuals, three-fourths of the high pressures were noted in the right arm. Inequalities in pulse pressures were found in 274, the average being 14.3 per cent, with a maximum of 38 in the right arm. These inequalities are most often transitory; if permanent they may be organic.

### Causes of Hypertension

Lovers of the cup that cheers will most likely rejoice to know that there is not sufficient evidence to place alcohol among the chief etiological factors of hypertension. Tobacco, tea, and coffee may likewise be excluded. Dissipation and diet have practically no influence. Leanness and fatness have a definite influence, but seldom until after the age of thirty-seven years. Many diseases predispose to arteriosclerosis and hypertension, e. g., nephritis, diabetes, and myxedema. Heredity and infection are undisputed causes.

Chemical factors are thought by many to be of first importance. In physiological chemistry are hidden many, if not all, of the secrets of this disease. There we find many known physiological hypertonic and hypotonic substances, but considerably more of the latter. Among the first to be discovered was adrenalin which led to the adrenalin theory of Neusser in 1898 which is in itself of little scientific importance, though tumors secreting adrenalin may cause hypertension.

There are certain common factors that influence blood pressure. Regular daily work, monotony, and a self-satisfied disposition are the best stabilizers for one's millimeters of mercury. The people who live in a warm climate have a lower average blood pressure than those in a cold climate. The Chinese, Japanese and Mexicans seldom have high blood pressure, and do not show an increase in blood pressure with an increase in age, as do white Americans, and especially the American negro. Daily happenings with stress, strain and emotional upsets have their influence. Vacations and week-ends are thought to be of great benefit to one's mental and physical welfare, but it should be borne in mind that it is during these periods that the blood pressure is highest. The sympathetic nervous system and its degree of response is the most important factor in determining the variations of one's blood pressure. The patient's age, the number of visits, the intra-pulmonary pressure and the conditions under which it is recorded all markedly influence the pressure.

Hines and Brown have devised a method for measuring vasomotor reaction to various stimuli, by placing the subject at rest for twenty minutes and establishing a base line for his blood pressure. They have found that all subjects react with a rise of blood pressure when their hands are in ice water above the wrist. They have studied many subjects and in a preliminary report divide them into the following groups with these results:

| | Number | Age, years | Average Rise of Pressure | |
|---|---|---|---|---|
| | | | Systolic | Diastolic |
| Normal subjects | 40 | 17–50 | 8.9 | 7.5 |
| Other diseases without hypertension | 14 | 18–45 | 10.6 | 8.9 |
| Potential hypertension | 8 | 19–44 | 30.1 | 21.1 |
| Hypertension | ..... | 26–44 | ..... | ..... |
| Pre-organic types | 7 | ..... | 32.0 | 21.4 |
| Organic types | 11 | ..... | 38.4 | 22.5 |
| Arteriosclerosis | ..... | 55–91 | ..... | ..... |
| Without hypertension | 8 | ..... | 13.1 | 10.8 |
| With hypertension | 5 | ..... | 29.1 | 16.0 |

They believe that the group which they have termed "potential hypertension," or prehypertension will develop hypertension.

In a still more recent report they have given the effects of unilateral and bilateral resection of the major and minor splanchnic nerves in man. By this operation they have definitely influenced the blood pressure and especially modified the vasomotor response to various stimuli.

There are many factors that are sometimes thought materially to influence blood pressure, but which in reality have little effect. Hypertension is no more frequent in the short-necked, stocky type of person than in the tall, long-chested type. Alcohol, tobacco, tea, and coffee have little effect. In drug addiction there is a much greater tendency to hypertension. A syphilitic has a tendency to maintain a youthful blood pressure after the age of forty.

The hypertensive patient and his family are interested in his own case and not in statistics. The patient wants to know if his pressure can be reduced, or if he will die suddenly of apoplexy or be paralyzed.

### Classification and Symptoms of Hypertension

In a disease in which the pathological processes may be dormant and chronic, slow and progressive, or rapid and destructive, it is necessary to classify them accordingly. Therefore, a convenient classification is to divide hypertension into three groups: benign, severe benign, and malignant. In the benign type there is increased tonicity in the arterial system, especially in the arterioles, with slight hypertrophy of the medial musculature. In the severe benign, there is fatigue of the musculature of the vessels which, because of production of certain chemical substances, leads to more irritability, more spasticity, and more fatigue—thus a vicious circle. This causes degeneration and replacement by fibrous tissue and finally sclerosis.

In benign cases there is a history of hypertension for varying lengths of time. The patient has many symptoms but only one sign of hypertension and that is an elevation of blood pressure. The common symptoms are those described by O'Hare. Detailed studies of the cardio-renal-vascular systems, as well as of the retina, fail to show impairment. The activity of these individuals is not impaired.

Severe benign hypertension is most frequently seen in those who have had the simple benign type for a number of years. They have definite clinical signs and symptoms of hypertension and as the years advance, more rest is needed for them to carry on their daily activities. They show pathological changes in varying degrees. An occasional retinitis develops, which soon subsides. There may be retinitis with hemorrhage and a small amount of exudate which also subsides, and by careful ophthalmoscopic examinations these changes can be accurately followed. The heart, kidneys, and vascular system likewise eventually show changes. The rapidity of these changes will determine if this type of hypertension will become malignant.

Malignant hypertension includes an important though small group of cases with an excessive hypertension which runs a rapid and fatal course. Various terms have been employed to define this condition. Those most often used are malignant hypertension, malignant renal sclerosis of Fahr, genuine contracted kidney, and chronic interstitial nephritis. Volhard and Fahr in 1914 first used the term malignant hypertension and accurately described its course. Keith, Wagener and Kernohan in 1924 applied the term malignant hypertension to a condition characterized by persistent hypertension, a progressive disease with a fatal termination, with absence of anemia, with slight or no renal failure until later in the disease, accompanied by cardiac hypertrophy, characteristic destructive retinal changes, and a generalized arterial involvement. Clinically, this disease is more severe in every respect than the benign type, and is characterized by severe headaches, progressive loss of vision and weight, nausea, vomiting, excessive hypertension, and functional failure of essential organs.

### Prognosis

The most important factors in arriving at a prognosis is the proper classification and careful observation of the pathological changes. The systolic and diastolic pressures are not very important factors unless the pressure is fixed and cannot be varied by rest and tests, such as the nitrite test. The age is of minor importance, but life expectancy is always decreased. The etiological factors are of great importance in determining the prognosis. Hypertension in such diseases as nephritis, dia-

betes with marked cardiac hypertrophy, typhoid, and rheumatism, offers a poor prognosis; but if the hypertension is caused by prostatic obstruction, pregnancy, or certain toxic conditions, the prognosis is much bettter. The most important factor is the amount of permanent, irreparable arterial sclerosis, especially of the eyes, heart, and kidneys. Ophthalmoscopic examinations should be made frequently. Electrocardiograms are useful, but are of less importance. The proper study of the kidneys, including blood urea, phenolsulphonephthalein test, Mosenthal test, and routine urinalysis, is essential. Casts and albumin alone may have litle significance. Falling blood pressure is frequently an ominous sign in hypertensives. This is generally due to congestive heart failure, coronary thrombosis, cerebral arteriosclerosis, or severe uremia. Symptoms of grave significance are dyspnea, a late symptom of heart failure; nocturia, a late symptom of renal insufficiency; vertigo, a late symptom of cerebral sclerosis.

Allbutt said, "To distinguish in a particular case between essential hypertension in its early stages and neurasthenia may be a matter of some difficulty." O'Hare noted the following symptoms in cases of essential hypertension: vasomotor symptoms, flushing, blushing, cold, sweaty and cyanotic hands; frequent epistaxis; abnormal menstrual flow; migraine; dizzy spells; and a type of personality characterized by morbid sensitiveness and a high strung temperament. These are the symptoms that occur most frequently years before hypertension develops. The psychic nature of these symptoms and the fact that Aymon and Pratt have relieved 82 per cent of this type of individual by removal of environmental difficulties or by adjusting them and by the use of sedatives and suggestion lead us to believe that this is the place to begin treatment for certain types of hypertension. It is believed that coronary thrombosis and many of the other complications of sclerosis might be prevented by making satisfactory adjustments at this time.

### Treatment

In order to be successful, the treatment of essential hypertension should be started in our high schools, or, at least, in our colleges and universities. Courses in sociology and psychology should be instituted to give our youth a different perspective of life from that which exists today. Few are rich, and fewer are to become rich. The school boy's access to money today was the dream of our forefathers. The European is satisfied to retire when he has a comfortable living. The American idea is to get richer and richer and he is willing to gamble with his savings and necessarily with his arteries. It is the American idea to deprive ourselves of peace, pleasure, and leisure, and to strive for wealth. If only a school boy could read a horoscope and see the three stages of life, namely, the first twenty to twenty-five years of evolution, followed by a period of sustained existence, and then a period of involution in which arteriosclerosis is the outstanding feature, a more satisfactory gyroscope could be installed around his vasomotor apparatus.

With the advent of the thermometer, physicians sought antipyretics to treat patients with a fever and thought little of the disease of which fever is only a symptom. Today we are doing the same thing with hypertensive individuals. Blood pressures, from what has been said, are notoriously misleading. Drugging a patient with chemical substances is unsatisfactory. The absence of a suitable sustaining drug to lower blood pressure is, in my opinion, a blessing to mankind. With such a drug, headache, dyspnea, vertigo, edema, nocturia, and cerebral catastrophies would necessarily be increased. Drugs, diet, exercise, and many other generally applied therapeutic agents all have their places. It is, however, through the proper understanding of the individual and the correction of his habits that the most good can be accomplished. The patient that leaves a doctor's office with a list of "don'ts," a confused mind, and a fear of early death, has in most instances been properly initiated into that fraternity of self-centered introspective individuals who become our confirmed hypochondriacs.

In conclusion, there are a few things of extreme importance to the hypertensive which need further emphasis: First, optimism appropriately applied to each individual case; second, a satisfied mental state; third, a substitution of relaxing habits for tense ones; fourth, the avoidance of anticipating future tasks and responsibilities; fifth, a few drugs skillfully prescribed.

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## A SIMPLER METHOD OF REDUCTION OF DISLOCATED SHOULDER JOINT.*

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The numerous methods described for reducing dislocations of the shoulder joint tell the tale of the difficulties encountered and that the last word has not yet been said. However, the following procedure has been a hundred per cent satisfactory in reducing twenty-five successive cases of uncomplicated dislocations of the shoulder. It never takes more than one minute, without anaesthesia and without pain, and not even a hypodermic of morphia is necessary.

First, after a brief history of the accident which caused the injury, and a gentle palpation, one can be pretty sure whether the case is simple or complicated by fracture.

Then have the patient lie down on an examining table, bed, floor, or ground, according to the surroundings, always in such a position that the operator may be directly behind the patient's head. Grasp the elbow with one hand, supporting the forearm with the other, to prevent its flopping about and causing rotation and pain at the shoulder. Abduct the arm, while maintaining gentle traction in the direction of the long axis of the humerus, in the same plane for one-half the arc of a circle, till the elbow is above the head and the arm close to the ear. When this maneuver is begun, it immediately relieves the pain which is caused by pressure of the head of the humerus on the peri-articular structures. In this position, increase traction, sometimes with slight to and fro rotation, till the head of the humerus slips into position. If the muscles of the anterior and posterior folds of the axilla are spastic and the patient is very muscular, the wrist or hand may be steadied under the arm of the operator and the other hand used to massage the muscles, to encourage relaxation. Even with the most muscular patients, one is never required to exert more force than that

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which can be done in the erect position with the elbow flexed, and using only his own shoulder muscles. Pressure on the dislocated head is never necessary.

Fig. 1.—The best position for patient and operator.

Backward and upward dislocations of the head of the humerus are rare and are easily reduced with downward traction and slight to and fro rotation, and that is the only method described for that type of dislocation.

In order to make the mechanics of the subdislocations, which are so common, the same as the upward and backward dislocations, we have to reverse the position of the shaft of the humerus.

If one remembers that the shoulder is the most universal joint of the body and is surrounded by a loose capsular ligament, then, when approaching a dislocation for reduction, he may forget everything else about the complicated muscle pulls which make up its function, except, possibly, the large pectoral muscle which is the main factor in the etiology, and acts by pulling the head through the capsular ligament when the arm is fixed in extreme abduction, as in a fall. When the head of the humerus leaves its socket, the fibers of the capsular ligament on that side are stretched beyond endurance and split, allowing the head to escape. Then the position of the arm is changed, the fibers become lax and loosely hug the neck of the humerus, and the leverage of the arm causes the head to press hard on the peri-articular tissues. If downward or outward traction is used, one has to put too much

Fig. 2.—This position can be used if patient is not in shock, but relaxation is not so good.

tension on the good side of the capsular ligament in order to get the split side taut enough to slide along the neck of the humerus over

the head. And when manipulations are done, one is trying to push the head through a split in a lax sack, and he may or may not hit the opening.

When the elbow is above the head and the arm close to the ear, then the upper fibers of the capsular ligament are loose and the lower ones taut, and the slit is snug around the neck of the humerus, allowing its head to be pulled into position by its neck, which guides it back through the opening through which it escaped.

I shall not attempt to describe any procedure for reduction of dislocations complicated by fracture of any of the bones of the shoulder joint, because one has first to make an accurate diagnosis by X-ray and all other means to find the exact condition, and then apply such mechanical and anatomical principles and treatment as are indicated.

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## STERILIZATION AS A CONTRACEPTIVE.

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When one takes into consideration the apparent inability of our present industrial system, operating under highly mechanized forces, to furnish employment to that part of our population who, during the period of hand-labor, were a necessary part of the system, it may appear that we have now arrived at that point in our numerical population where a limitation of the same, in the lower brackets, may be not only desirable but actually necessary.

It is natural to assume that if such a limitation is ever effectually brought about, it would have its inception amongst the lower order of mankind, viz., those not mentally endowed to an extent that enables them to compete successfully with more alert minds, and, therefore, impossible of being fitted into our industrial system with any degree of success or prospect of economic stability.

Is it too much to say at this time that such a measure is already being enacted in various Commonwealths, through the eugenic sterilization of those who, by reason of mental dulness or aberration, have already become dependent upon the States of their citizenship through institutionalization in the various hospitals for the mentally disturbed, or colonies for the epileptic or mentally defective?

The operation of eugenic sterilization, as at present performed, and in the hands of a competent surgeon and under appropriate hospital conditions, is a comparatively harmless and innocuous procedure.

In the State of Virginia, where in the last few years 1,400 persons have been rendered procreatively harmless for cacogenic reasons, only one fatality has resulted, this being unavoidable by reason of an associated glandular dysfunction. The mortality rate is, therefore, practically negligible and may not be regarded as a contra-indicant.

For that large class of persons for whom contraceptive measures are most needful and applicable, surgical sterilization is the only safe and sure method of preventing reproduction, because of the fact that even if they can and do receive contraceptive instruction, they are very often too unconcerned or negligent to apply such measures properly.

There is a further angle to surgical contraception which may perhaps commend it as a practical thing for the moronic group: i. e., females of this class are decidedly more prone to invasion of the pelvic organs by infectious germs, with consequent salpingitis, and pelvic cellulitis, than the more intelligent; and such diseases, if death does not supervene, often leave in their wake chronic invalidism in those least able financially to afford it.

Through surgical contraception in the female, communication between the uterus and the fallopian tubes is permanently sealed, and the possibility of the occurrence of such devastating diseases is obliterated.

When the purposes, the results, and the absence of mortality are known and properly understood by those who may be most needful of such protection, there is usually no objection to the procedure. As a matter of fact, they would prefer to endure a little more at one time, be permanently done with the matter, and relieved of the fear of future pregnancies, rather than be burdened with the necessity of using chemical or mechanical contraceptives for many years.

Some investigation of the probability of sealing off the utero-fallopian communication by use of an intra-uterine cautery working through a dilated cervix has been made, but such a procedure needs further attention. This would indeed be the operation of choice, if it

can be developed to the point where it will insure a permanent sealing of the orifice. With the perfection of such a technique, a woman in need of contraception, by reason of ill health or financial inability to provide for additional children, may present herself at a reputable surgeon's office, and within a period of thirty minutes may have the orifice permanently sealed and go on her way rejoicing.

Where the orifice is large, perhaps several applications at different times may be necessary to produce a sufficient amount of scar, but in a small orifice, it is conceivable that one properly applied cauterization might produce the desired result.

In reviewing this subject briefly, one should not fail to mention the fact that surgical sterilization for contraceptive purposes is in many instances wholly applicable to the male member of the marital partnership and has the advantage of being much simpler to perform. It is understood, of course, that such cannot insure the female member against future pregnancies which may arise through extra-marital relationships, a certain percentage of which will be bound to occur, and that in such a case its efficiency would be wholly dependent upon the wife's loyalty to her husband.

Many cases will arise in which the wife, for reasons of mental attitude or physical ill health, may not care to submit to surgical sterilization herself and yet desires to secure permanent protection against future pregnancies. In such cases the application of a very simple, harmless, and effective measure may serve the purpose. This consists in severing the vas deferens, on both sides, in the husband and ligating the same, and may be pursued with perfect confidence of rendering the husband incapable of procreation, without, however, rendering him in any sense impotent or incapable of normal sexual relationships and gratification.

Since the Federal statutes prohibit the use of the mail service for the distribution of contraceptive literature, it is anticipated that widespread information on the subject would be immeasurably slowed up. On the contrary, since the Federal Government has placed itself on record as favoring eugenic sterilization through the action of its Supreme Court in upholding the constitutionality of the Virginia Sterilization Law, it would seem that an investigation of the feasibility of utilizing this procedure in many types of cases in which, by reason of individual negligence or lack of intelligence, the ordinary chemical or mechanical contraceptives are inapplicable, is well worthy of serious consideration.

## ANALGESIA AND ANESTHESIA IN OBSTETRICS.*

J. M. WHITFIELD, JR., M. D., Richmond, Va.

Probably the greatest change in the practice of obstetrics during recent years has been the perfection of methods designed to alleviate the pains incident to parturition. Many and varied processes have been evolved and tried with various degrees of success. In 1847 Sir James Y. Simpson employed ether and chloroform for this purpose, and nitrous oxide has been used since 1878. In 1902 the so-called twilight sleep was introduced by Steinbuchel and tried for some time. Its results, however, were quite unsatisfactory, and its usage was attended by a definite increase in both infant and maternal mortality. Twenty-one years later a definite improvement was made by Gwathmey when he introduced his ether and oil rectal instillation combined with morphine and magnesium sulphate injections.

It will be seen from the above that relief from pains of childbirth is a major problem in the study of obstetrics. It is even more important to the expectant mother, as most patients we see today demand relief. This is indeed no new request, for in 1591 a woman of note, Eufame McAlayne, "was burned alive in Edinburgh" when she begged for relief from the pains of childbirth.

Since 1927, when avertin or tribom-ethanol was introduced by Eicholtz, a new group of anesthetic agents has been employed. Since this time the barbiturates have come rapidly before our attention. In the same year McNeile and Vruwink employed dial, and in 1931 Hamblin and Hamblin discussed the use of sodium-amytal by mouth as it is now generally used.

The present review consists of 744 deliveries in which a variety of drugs has been employed. In all these cases either sodium-amytal, nembutal, dial, or avertin, has been the agent used for producing our basal anesthesia. Some time ago Dr. M. P. Rucker and I studied a series of 115 consecutive cases delivered under these drugs and found that complete amnesia was obtained in 95 per cent of

*Read before Richmond Academy of Medicine on June 13, 1933.

our cases. This figure, if changed at all, has increased as our experience with the drugs has grown. Dr. Rucker has very kindly allowed me to use his cases with my own in this study.

MEDICATION

| | |
|---|---|
| Sodium-amytal | 706 |
| Ether | 577 |
| Hyoscine | 605 |
| Gas-oxygen | 90 |
| Avertin | 60 |
| Spinal | 35 |
| Chloroform | 11 |
| Ethylene | 5 |
| Local | 33 |
| Nembutal | 33 |
| Dial | 3 |

TYPES OF DELIVERIES

| | |
|---|---|
| Spontaneous | 160 |
| Low forceps | 180 |
| Mid-forceps | 199 |
| Version | 144 |
| Breech extractions | 32 |
| Abortions | 10 |
| Caesarean sections | 3 |
| Not stated | 16 |
| Total | 744 |

The high incidence of the operative deliveries in this series is due to the belief that termination of the second stage as soon as it is possible to effect it with safety to the mother and the baby should be practiced under favorable conditions. Also, as patients under the influence of drugs such as these cannot be expected to cooperate in the second stage of labor, so, therefore, the natural expulsive forces will often need assistance on the part of the accoucheur. Furthermore as will be later shown, many of these cases were referred because of real or expected complications.

My opinion is that nembutal and sodium-amytal may be used inter-changeably. There is very little difference in their action, although some believe that there is less restlessness than when amytal is used. Three grains (3 grs.) of sodium-amytal is the equivalent of one and one-half (1½ grs.) of nembutal. Our experience with dial has been so small that I am unable to form any definite opinion.

At present my practice is to administer fifteen grains of sodium-amytal or seven and one-half grains of nembutal as soon as labor has really started and to reinforce this agent with hyoscine, grains 1/200 as needed. We have found that the addition of hyoscine is essential in securing any uniform results, and, furthermore, is quieting to the patient. The excitement and consequent need for controlling the patient under these drugs has been widely advertised, but should give the physician little concern. Delivery can be completed without further medication but usually chloroform, ether, gas or local is used for the completion of labor. It occasionally happens that if the labor is long and protracted we may administer ether and oil, as it acts nicely in this condition. However, I may note here that I have produced amnesia for twenty-eight hours with sodium-amytal, grains fifteen, and three doses of hyoscine, grains 1/200.

Experience has taught us that judgment is necessary in the proper selection of the drug for each case. Amytal or nembutal is applicable in the majority of cases and will give best results if given in early labor when hours are yet to elapse before delivery. Their action is of long duration and is quite reliable if hyoscine is used with it. It also appears that a large dose should be given at once, as analgesia and amnesia will not be so frequently obtained if the drug is delayed too long. On the other hand, should the patient be seen late in labor and it is obvious that labor is progressing rapidly, with a probable duration of only one or two hours, we have found that amytal or nembutal may be disappointing. For such persons we usually administer avertin, 60 mgm. per kilo, as soon as possible. The action is not unlike that of ether and oil by rectum. However, there is no irritation or burning, it is not so often expelled, and even after the patient has apparently waked up the amnesia often lasts for hours. The drug may be repeated after three hours without hesitation. Here, then, is its greatest application when rapidity of action coupled with not too long duration is desired.

In this series the following complications were encountered:

| | |
|---|---|
| Pyelitis | 19 |
| Toxemias | 39 |
| Contraction rings | 21 |
| Prolapsed cord | 4 |
| Placenta previa | 13 |
| Retention of urine | 4 |
| Post-part, hemorrhage | 8 |
| Separation of placenta | 8 |
| Inertia of uterus | 8 |
| Eclampsia | 9 |
| Amputation of cervix | 1 |
| Shock | 3 |
| Febrile | 24 |
| Twins | 9 |

| Deaths | |
|---|---|
| Maternal | 0 |
| Abortions | 11 |
| Still-births | 13 |
| Neo-natal | 17 |
| Uncorrected rate | 5.44 |
| Corrected rate | 3.98 |

(Without non-viable babies)

There were other complications encountered which had no bearing on the treatment given at delivery and will therefore not be mentioned. The toxic cases included forty-eight patients, nine of these actually having convulsions. The treatment of these patients included $MgSO_4$ intravenously for the control of actual convulsions, and the use of sodium-amytal or nembutal with hyoscine for subsequent sedation and prevention of further convulsions before and during labor. In many of these cases it was necessary to induce labor, and in this event it is customary to administer the drug before going to the delivery room for rupture of the membranes or the insertion of a bag. Both the barbiturates and avertin work nicely in the toxemias of pregnancy and, in my opinion, are not contra-indicated.

There were eight cases of inertia of the uterus of varying severity. To me this is a most troublesome complication, as these patients either do nothing at all, or make very slow progress in labor despite the best endeavors of the physician in charge. They complain for hours with pain, and yet the cervix does not dilate nor does the head descend. They seem to have a great deal of discomfort far out of proportion to their short and irregular contractions. Time is necessary for the proper preparation of the birth canal, and here sodium-amytal is of great value. Indeed, it has often appeared that the progress of labor has been greatly hastened by its administration.

Twenty-one cases of contraction rings occurred and were treated usually with adrenalin followed by immediate delivery.

There were four cases of retention of urine—an incidence certainly not above normalcy, and mentioned to sustain the belief that analgesia of this type has no influence on the condition.

Eight cases of post-partum hemorrhage occurred. It is my impression that bleeding is slightly freer after avertin than after amytal or nembutal, but in neither case should the physician fear this accident more than in any ordinary delivery.

The case of amputation of the cervix was of interest because of the dense cicatrization encountered. Under sodium-amytal dilatation was rapid and delivery uneventful.

The appearance of shock was noticed in only three instances. Various writers have warned of this condition, and Dr. Plunkett, in his review of 300 cases, reports three cases of shock. We have had only three in approximately 750 deliveries, and feel that incidence is probably below the general average treated in the usual manner. It is, however, a real complication, and we should be ready to treat it when it does occur.

Finally twenty-four febrile cases were encountered, and this includes all patients who had temperature of 100.4 on two successive days after delivery.

In so far as the infant mortality is concerned, I am sure that the medication could in no way be held responsible. A few more babies will probably need artificial stimulation to start respiration, but in a short time the baby will start up and proceed to breathe and cry lustily.

*Conclusions:* A series of 744 consecutive deliveries under sodium-amytal, nembutal, dial, or avertin, or a combination of these, is presented. Using the methods above described, complete amnesia can be produced in approximately 95 per cent of cases. The maternal and infant mortality is apparently not affected.

*Professional Building.*

## ORAL DIAGNOSIS.*

S. C. WARDEN, D. D. S., Norfolk, Va.

Upon being extended this opportunity to come before you, I felt honored personally, and as a reflected courtesy to the dental profession of Tidewater Virginia. We, of the dental profession, are seriously striving to measure up to the responsibility vested in us in caring for that all important threshold, the oral cavity. Since the primary cause of diseases originates in the oral cavity, a grave responsibility is placed upon the dentist, which requires not only thorough training in the mechanics of dentistry, but familiarity with pathology, laboratory examinations and physical diagnosis.

The discussion to-night will make no attempt to stress any one phase of dentistry, nor its relation to the parent profession; instead I shall hurriedly try to cover a few of

*Read before the Norfolk County Medical Society, November 21, 1932.

those features that so intimately bind the medical and dental professions—a resumé, as it were, of recent advances in dentistry, bringing out findings, which, we hope, will aid us in our age old war on disease.

One of the weakest links in the practice of medicine or dentistry is diagnosis. Diagnosis can be aptly defined as the conclusion at which we arrive in the process of applying the mind to a collection of scientific data.

The very large majority of patients coming into the dental office require only a cursory examination to bring about a certain definite relief. This type of patient has no part in this discussion. It is to that smaller group who daily come to the dental office with either a local or systemic disturbance, and who require a careful analysis of all possible factors in order that the character of the operative procedure may be determined that we shall address ourselves. Too often these cases fail to receive the careful consideration of all available scientific data, the diagnosis being based upon one or two outstanding objective signs. Local lesions in the oral cavity may be the cause, effect or the sign of local, systemic, or organic disease anywhere in the body. Consequently, the dentist who looks into a patient's mouth will miss something of vital importance to that individual if he sees only teeth.

Dentistry has accepted the guardianship of the mouth and has assumed the responsibility of keeping it in a condition that will harmonize with bodily health. The time is past when the dentist, if he is to meet the responsibilities which the public has every right to expect him to assume, can confine his efforts to taking care of merely local conditions of the mouth, and thus make his treatment routine for all patients—filling, extracting and replacing teeth, seeing nothing but teeth. We are now thinking in terms of health rather than in terms of teeth.

The greatest single aid at the command of the dentist is the roentgen-ray. Even so, too many men, when associating mouth infection with systemic disease, are over evaluating the findings on the dental film. In viewing a film we must remember that we are looking at shadows instead of pathologic processes. They may indicate pathological changes in the osseous structure; they may indicate variation of anatomic structure; or they may be evidence of traumatic changes. Any attempt to diagnose a case based upon film alone would be of little or no value. The clinical picture, the age of the patient, physical resistance, the possible recuperative powers of the patient must all be coupled with the roentgenographic findings before diagnosis and prognosis can be made. It has been conceded that in some of the most vicious infections arising from foci in and about the teeth, the roentgenographic evidence is negative. Therefore, the roentgen-ray finding is merely a link in our chain of evidence; it becomes only a part of our collection of scientific data.

Today the field of dentistry must embrace not only the care of the teeth, but also the diagnosis and treatment of many of the lesions occurring in the oral cavity. In addition, we are charged with very grave responsibility in being the first line of defense in the fight on cancer. Blair, in his new textbook, says: "It is mainly to the educated dentist, grounded in oral pathology, who makes the complete survey of the whole mouth, that the medical profession and the public must look to reduce the ever-increasing death rate from cancer of the mouth."

The modern dentist looks upon any irritation of the tongue or mucous membrane with considerable concern, for it may be the source from which malignancy easily springs. The dentist sees these lesions usually long before the physician, for discomfort is rarely present, and the patient himself is often unaware of their presence. When discomfort appears, and the aid of the physician is sought, they may be so far advanced in their development that probability of successful treatment is greatly reduced. Today's dentist is trained to observe any abnormal area of the mucous membrane or tongue. He will, if allowed, view that area with suspicion when it cannot be accounted for by dental disorders, and will follow the case until the condition can be identified.

During the last twenty years the idea of focal infection has evolved from a theory into a method of practice. Today the search for and the attempt to eliminate foci is universally practiced. Still it is controversial in that it remains a problem. We find many conflicting opinions as to what constitutes a focus of infection. Rosenow defines focal infections as "A metastatic systemic or local condition due to infectious micro-organisms or their toxins carried in the blood or lymph stream from a focus or foci of infection." A focus of in-

fection is a localized area of tissue containing pathogenic micro-organisms, and may be either primary or secondary. This definition is, of course mildly controversial.

As to the importance and extent of eradicating these foci, may I quote Gruenberg on some of these major conflicts, showing the tremendous responsibility placed both upon the dentist and the physician in determining what is best for the individual:

(1) Bacteria are found in both healthy and pathological tissues.

(2) Phagocytic bacteria may me found in healthy as well as diseased individuals.

(3) Dental infection may be the result of some systemic disturbance rather than a cause of it.

(4) Many people get well as result of extraction; many do not.

Many investigators report cures in cases of insanity, or other diseases, as the result of extraction. Others report cures by entirely different methods, such as psycho-analysis. Admitting the focal infection theory, it does not follow that all infected teeth must be removed, or that focal infection is the only source of trouble. The consensus of opinion of the authorities may be used to broaden our basis for judgment.

In patients who have secondary disease that may be attributed to focal infection, *all* pulpless teeth should be extracted. In patients who are well *all dead teeth* should not necessarily be condemned. Patients with dental foci should not be handicapped with loss of useful teeth until other foci have been investigated and eradicated.

Clinicians are often disappointed in results obtained after removal of a supposed focus of infection. Disease once initiated is often not affected by the removal of the apparent cause, proving the need for early recognition and removal before metastasis to other organs has taken place.

In seeking the location of primary infection it should ever be borne in mind that a filthy mouth, presenting as it does the many crevices and shallow pockets which act as bacterial incubators, is of major importance. If for no other reason than the close relation to the lymphatic drainage this condition is worthy of consideration.

During the past fifteen years the journals, both medical and dental, have given full consideration to the status of residual and periapical foci of infection. We have seen gratifying results in the alleviation of many baffling systemic disturbances; however, little attention has been given to that even more important source of focal infection, namely, that emanating from hidden pyorrheal pockets. It is of great importance to observe this.

Pyorrhea in its progressive phases is a diffuse condition affecting both the alveolar process and the soft tissues. Hartzell states that a case of advanced periodontoclasia will present the equivalent of approximately seven square inches of ulcerating surface, from which the lymphatics, veins and blood stream can be, and are invaded.

Periodontoclasia frequently exits without the physician's or dentist's knowledge and is too often a source of serious blood changes. Systemic disease is manifested as the result of pyorrhea either through extension to adjacent tissues and by metastasis to more distant organs, or through absorption of toxic bacterial products from the gastro-intestinal tract. In advanced periodontoclasia, in addition to the compression of tissues during mastication with the liberation of free purulent matter for passage into the gastro-intestinal tract, there is a driving force exerted by functional use of teeth that recurrently compels bacterial migration into surrounding vascular tissues. Many investigators are of the opinion that systemic disturbances resulting from pyorrheal involvements are more prevalent than from radicular or periapical causes. This disease, being chronic and prolonged in character, has an ample opportunity to break down the patient's resistance by disturbing the digestive and metabolic mechanism.

May I mention one or two observations by authorities? It is estimated that 90 per cent of chronic arthritis is due to dental foci (Willcox), while the majority of these cases result from pyorrheal sources. Long reported that pyorrhea was responsible for 135 out of 215 cases of eye infection. We could continue at length citing cases in confirmation of the above.

Up to this point we have been speaking of infectious processes resulting from impairment of the dental organ. However, I would like to impress this thought upon you: the future of dentistry lies in preventing, if possible, the development of such processes. Dental caries and pyorrhea, resulting in periapical and periodontal infection, in the light of

our present knowledge are considered local manifestations of a disturbance of metabolism.

A series of 604 cases was reported at the annual meeting of the American Dental Association in September of this year, in which the incidence of caries and of periodontal involvement was reduced 90 per cent following the institution of nutritional treatment. This nutritional reinforcement consists of dietary changes to insure an adequate intake of mineral salts and vitamins. The data collected by workers in the nutritional field, as well as in the cases mentioned above, point to a confirmation of the fact that the diet of the average American cannot be depended upon to supply in adequate amounts the mineral salts and vitamins deemed necessary for sound nutrition.

It is thus seen that an improvement or acceleration of the physiological processes of the body will necessarily be the goal of the dentistry of the future, and the term *health*, as far as the dental profession is concerned, will be characterized by a freedom from a predisposition to dental caries or pyorrhea.

On behalf of my colleagues in the dental profession may I make this request: when you have cases of dental origin, or with dental complications which might be of interest, call in some one of your dental associates. Such visual experience will be of incalculable value to him in his forward step in attaining a clear understanding of his responsibilities as a guardian of the port of entry.

*Medical Arts Building.*

## THE TREATMENT OF SCIATICA BY EPIDURAL SACRAL INJECTION.*

PAUL F. WHITAKER, M. D., F. A. C. P., Kinston, N. C.

In presenting this brief paper on the treatment of sciatica by epidural sacral injection, nothing new or original is claimed by the writer. Rather is it his purpose to call attention to and emphasize a therapeutic procedure of proven value; one which is readily and easily carried out by the man doing general work, and one which gives relief in the majority of instances to a distressing condition which is often highly resistant to other forms of therapy.

Vertebral arthritis, trauma and foci of infection are probably the most common known causes of sciatic pain. However, there is a large proportion of cases in which the etiology is unknown, the so-called primary or idiopathic type. Regardless of the etiology, it is common knowledge to the man in general practice, who sees most of these cases, that the average treatment instituted, such as removal of infection foci, internal medication, application of heat and counter-irritation, electrotherapy, massage, etc., are all too often unavailing, and the distressed sufferer wanders from one doctor to another, the osteopath, or the chiropractor, in search of relief. It is in this type of case that epidural injection is particularly indicated.

William Evans, writing in *The Lancet*, has found that, in 40 cases of idiopathic sciatica, intra-sacral epidural injection produced immediate and complete relief in over 60 per cent, while a further 13 per cent were greatly benefited. In 14 cases, or 25 per cent, the injection failed to produce relief. In all of his cases other forms of therapy had been unsuccessful. F. G. Lindenmulder, in writing in the *Journal of Nervous and Mental Diseases*, September, 1931, reports 46 cases in which sciatic pain was relieved in 40 by sacral epidural injection.

The writer's experience is limited to six cases, which have been followed long enough to draw definite conclusions. Every one of these cases had been through the usual treatment without any benefit. One patient, a railroad brakeman, had suffered for 7 years and would often be confined for as long as two months by the condition. Three of these cases had definite foci of infection which will be cleared up. Of the six cases treated, four have obtained complete relief, one states that he is markedly improved, and one states that he has not been benefited. The latter case is highly neurotic and it is difficult to evaluate the extent that he actually suffers. However, he states that he is unimproved, and will consequently have to be reported as a case where the treatment failed.

A total of thirteen injections were given the six cases. One injection was sufficient in two of the cases. In three others two injections were given with complete relief in two, and marked relief in one. The sixth case received five injections with no relief. An average of 100 c.c. of fluid was used at each injection. One hundred and sixty c.c. of fluid was used in the case that obtained no relief. The fluid used was normal saline solution warmed to body

*Read before the Seaboard Medical Society, at Rocky Mount, N. C., December, 1932.

temperature. In all the injections the first 10 to 20 c.c. of fluid consisted of 2 per cent procaine solution.

The fact that success does not always follow the injection of much more solution than the 60 to 80 c.c. commonly recommended, suggests the fact that the quantity of the fluid injected has nothing to do with the success of the treatment. It was rare to experience resistance to the introduction of the solution until the quantity injected exceeded 80 c.c. The fact that saline solution alone has been used successfully, as well as procaine solution, suggests that the relief from sciatic pain is not dependent on the nature of the fluid introduced. The important factor in the cure of the pain seems to be the mechanical stretching of the nerve roots that go from the sciatic nerve. This conception is supported by three main facts. First, many of the patients experience pain along the course of the affected sciatic nerve during the injection; second, the introduction of saline into the sacral canal seems to be as efficacious as procain solution in relieving the pain, and third, visible stretching of the nerve roots has been observed in the cadaver during the injection.

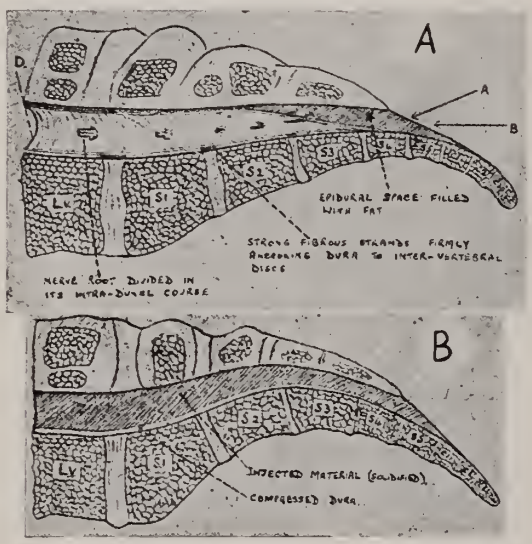


Fig. 1.*—A, Sagittal section of lumbosacral region. (=dura). B, sagittal section of lumbosacral region, showing compression and anterior displacement of dural tube and its contents following intrasacral epidural injection.

The anatomic relationship of the lower part of the spinal theca and the nerve roots that go to form the sciatic nerve has been studied in transverse and sagittal sections of the lumbosacral vertebra by Evans. The epidural space which is filled with fat is prolonged upwards in the spinal canal and invests the dural covering of the spinal cord. The ventral or anterior compartment is traversed by firm fibrous bands which anchor the theca to the intervertebral discs. This makes it difficult to completely separate the dura from its attachment to the anterior wall of the spinal canal. In its posterior and lateral aspects, however, there is no anchoring of the dura to the bony wall, so that it is possible to separate it and to enlarge the space at the expense of displacing the dural tube and its contents forward. The material injected separates the dura from its normal close anatomical contact with the posterior and lateral walls of the spinal canal and displaces it forward and inward. By reason of its anchoring fibres the anterior segment of the dura preserves its close relationship to the posterior surface of the bodies of the vertebra. The compression of the dural tube and its contents is readily appreciated by comparing figures A and B and figures C and D.

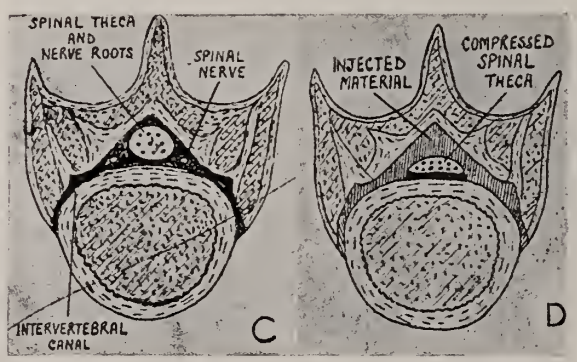


Fig. 2.—C, Transverse section through the body of the 5th lumbar vertebra. D, Transverse section through the body of the 5th lumbar vertebra, showing the anterior displacement and compression of the spinal theca and its contents after intrasacral epidural injection of the dye.

## Figures

*Technic of Intrasacral Epidural Injection.*—The patient lies on the affected side with thighs and legs slightly flexed. In obese individuals the point of injection may possibly best be located with the patient in the knee chest position. After the patient is placed in the proper position, the triangular outlet of the sacral canal (sacral hiatus) is defined in the following way: The tip of the coccyx is first located and the palpating finger is made to slide upwards toward the sacrum for a distance of approximately 2 inches. At this point on either side of the mid-line the prominent

*Illustrations used by courtesy of The Year Book Publishers, Inc.

cornua of the sacrum can be readily felt in most cases. Above the cornua the imperfect laminae of the fifth sacral vertebra are found to converge to form the apex of the triangular sacral hiatus. This space, formed by failure of the laminae of the fifth sacral vertebra to fuse, is covered by a dense fibrous membrane, the sacro-coccygeal membrane. Under firm pressure with the finger this membrane can be felt to give slightly, and this sensation can be elicited nowhere else in that particular region. The mid-point between the two sacral cornua marks the site of the injection. After filtrating the skin and needle track with 2 per cent procaine, a spinal puncture needle is introduced into the sacral canal. After penetration of the skin the needle should be directed at about a 45 degree angle in order to penetrate the tough sacro-coccygeal membrane. Immediately it penetrates this membrane its direction should be changed so that it is horizontal with the body. It is then advanced for about an inch

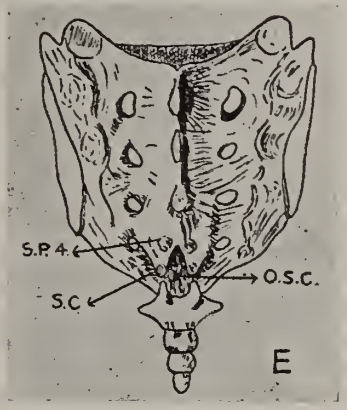


Fig. 3.—Showing the anatomical boundaries of the outlet of the sacral canal (o.s.c.). S. P. 4=spinous process of 4th sacral vertebra. S. C.=sacral cornu.

into the epidural space. At this point a syringe is applied to the needle and an attempt made to withdraw the piston. If spinal fluid is aspirated, then the needle has been advanced too far, and is withdrawn a short distance. This precaution is obviously necessary in order to be certain that the tip of the needle lies in the sacral canal outside the spinal theca. The sterile solution previously warmed to body temperature is then introduced slowly by means of a 20 c.c. syringe. Ordinary aseptic precautions should, of course, be observed during the procedure. Following the injection the patient should lie on the affected side for half an hour and remain recumbent for 24 hours.

During the procedure practically all of the patients complain of discomfort and distention in the sacral region, which becomes worse as more fluid is injected. There is, however, not usually actual pain in this locality. Most patients complain of pain in the sciatic distribution on the affected side. Headaches occasionally occur and abnormal sensations, such as parasthenias, vasomotor flushing, etc., have been observed, due most likely to the novocain injected. Temporary loss of sphincter control has been reported, but as far as I know there has never been a fatality following the procedure.

### Summary

1st.—Six cases of sciatica treated by sacral injection are reported.

2nd.—Epidural intrasacral injection is a safe, easily accomplished procedure, being readily done in the patient's home and requiring no elaborate equipment or special training.

3rd.—It offers relief in approximately 75 per cent of the cases suffering from a usually distressing condition which is often highly resistant to other forms of therapy.

4th.—The thought that its importance as a therapeutic procedure was not fully appreciated prompted the presentation of this brief discussion of the subject.

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## THE DIAGNOSIS AND TREATMENT OF DUODENAL ULCER.

RICHARD S. ANDERSON, M. D., Rocky Mount, N. C.

There has been much written about diagnosis and treatment of duodenal ulcer which will aid a great deal in the treatment of these patients. The duodenal ulcer problem is a great problem, and one meets each day with conditions which make it hard to decide whether it is best to do surgery or continue with

medical treatment. I do not believe there is much to be added to what has been written about this subject, but I just want to add a few suggestions and a few points which I think might help in the present-day situation in treating these conditions, because we are at such a time when these patients cannot be treated as they once were owing to great financial difficulties and other causes.

We meet each day with certain types of patients with whom we would like to advise medical regime instead of surgery, but, knowing the condition of the patient, his financial condition, etc., which will not enable him to take a long course of medical treatment, we have to resort to surgical treatment.

The main point that I wish to stress in this paper is to try to arrange some form of treatment that is best for the particular patient under the circumstance in which we meet him, although at times we would like him to do otherwise. Therefore, we must modify our treatment for ulcer in some way so that the patient will get some benefit under the circumstances which exist.

Duodenal ulcer is very common in the present day and has probably increased considerably since such a great depression is on and many people are under a great nervous strain and high tension. There is no doubt that the duodenal ulcer has largely increased, because I believe this is one of the etiological factors existing in such a condition.

We realize the fact very well that duodenal ulcers are far more frequent in Jews than in Gentiles, but in the past few years one is required to live under such a great strain mentally, physically, and financially, that the duodenal ulcer problem is increasing daily in the Gentile.

The symptoms of duodenal ulcer will not be gone into in detail, because every one is familiar with the symptoms.

I would like to say something about the various types of ulcer. Most duodenal ulcers, we know, occur on the anterior wall, although there is an occasional ulcer on the posterior wall. The symptom of an ulcer on the anterior wall is simply pain two or three hours after meals, relieved by taking an alkali. Occasionally there is hemorrhage, but not very frequently. There is additional pain that usually occurs when an ulcer is on the posterior wall of the duodenum, and this pain is referred to the back, although an ulcer on the anterior wall may produce pain in the back also, but not nearly so often as ulcer on the posterior wall. As stated above, the majority of ulcers are on the anterior wall, so very seldom do we have to deal with the problem of treating an ulcer on the posterior wall.

The clinical history, of course, is of great help in making a diagnosis. In the hands of a competent roentgenologist, we should be able to diagnose 95 per cent of duodenal ulcers. Of course, an ulcer on the posterior wall may be overlooked occasionally, but one should always depend upon the roentgenologist for a definite diagnosis. At times a roentgenologist may not report an ulcer although at operation one may find it present. But this does not occur very often in the hands of a competent roentgenologist. At times a duodenitis may also produce symptoms similar to ulcer. This, too, can be diagnosed by a competent roentgenologist for the definite diagnosis. Of course, one meets a case every once in a while that has a clear-cut symptom of ulcer, and the X-ray may be negative. This patient may have an ulcer that did not show, but which must be very small. In such a case, the treatment should be the same as if the diagnosis of ulcer had been made.

At times one meets a case which has a history of bleeding, and, on questioning, you can get very little history of an ulcer. This patient might have what we call a silent ulcer. Close examination of the stools will show occult blood, and at times the patient may give a history of having passed tarry stools without having any symptoms of ulcer at all. In this case, one is safe in saying this patient has a duodenal ulcer, even though the X-ray did not show it. It is this type of ulcer we call a silent bleeding ulcer. This is extremely important, because every once in a while one meets with such a condition, and he cannot account for the tarry stools, occult blood, and the patient does not give a clear history of ulcer. At times he seems at a loss to say just where the bleeding is coming from, but, on questioning the patient closely, you may get a history of some little stomach trouble; and, by ruling out all other sources of bleeding, one is safe in diagnosing an ulcer. Such a case should be watched very closely, because these cases usually have to have surgery.

The question of diagnosis of duodenal ulcer at the present day, as stated above, is usually

left up to the roentgenologist, and most of these cases also give a very clear-cut clinical history. I have mentioned three types of ulcer which usually occur—ulcer on the anterior wall, ulcer on the posterior wall, and the silent bleeding type, but the one we meet with most is the ulcer on the anterior wall.

The treatment of duodenal ulcer is very interesting and very important. The treatment of duodenal ulcer has been drawn out considerably. Much has been said about it and the long process of treatment has been given. At the present day we must make our treatment to suit the patient to a certain extent. The treatment of duodenal ulcer can be summarized very briefly. We can choose our cases and make up our minds without much hesitation or reservation as to which form of treatment is best under the circumstances.

I will first take up the treatment of duodenal ulcer in young individuals.

(a) Young individuals who have duodenal ulcer or a duodenitis, who are able financially, and who do not have to work for a living, may be put on a strict medical regime, and good results obtained. This medical regime is similar to the Sippy method with various modifications. At the present day, instead of using large amounts of alkali, mucin, 15 grains, three or four times a day is better than too much alkali.

(b) The second type of young individual with duodenal ulcer whom we have to treat is the hard working man who cannot go on a long medical regime. He cannot stay away from his work that length of time, and, in this particular patient, surgery should be urged.

(c) In any individual, young or old, who has a duodenal ulcer with obstruction, surgery is indicated.

(d) Old or middle-aged people with duodenal ulcer, who are able to go on a diet and stop work, may get very good relief from the medical treatment, but in these cases, if they have any symptoms of obstruction, surgery should be performed.

The main point in the treatment of these cases is that we must first determine what type of patient we are dealing with—whether or not he is able financially to carry out a long medical regime, and whether or not he has to work for a living. With a man who has to work hard daily for his living and who is suffering from a duodenal ulcer, it is impossible to put him on a diet which would be of much benefit to him. These are the cases which I would like to emphasize should have surgery. At the present day, as stated above, under such critical times and such financial embarrassment and depression, we are getting more of these patients each day. It is almost useless to give such a patient a long diet list and tell him to go by that and he will improve, when you know it is impossible for him to carry it out. Knowing now, as we do, that the surgical procedure in these cases gives good results and premanent, we should advise such individuals to have surgery, the type of operation being described later. I hope that no one will understand that I am against medical treatment in these cases, because I think it would work perfectly all right if the patient could carry it out. It would be ideal, but it just does not work, because we are confronted with a situation which must be handled some other way.

For the patient who is able to carry out the long process of treatment, can take vacations and long periods of rest, the medical treatment is ideal, and he will get good results.

Here I would like to mention the situation that we meet with in Jews. Jews are prone to duodenal ulcer, being more frequent in this race than any other that I know, and the treatment should be medical by all means if possible. I do not know why it is, but if a Jew has an ulcer and you operate upon him, no matter what type of operation you do, most of these cases come back with a recurrence—either a new ulcer, recurrent ulcer or multiple ulcers; and it seems that the more you operate the more ulcers develop. A new ulcer may even develop while the patient is convalescing in the hospital from the operation. It may be a gastrojejunal ulcer, if a gastro-enterostomy has been done, or it may be a new duodenal ulcer near where the pyloroplasty was performed, or he may have multiple ulcers. It seems that this race is prone to have recurrences, and, by all means, when one has a Jewish patient with duodenal ulcer, he should think and consider it a long time before he advises surgery, provided the patient does not have obstructive symptoms, in which event he is forced to have surgery. But the simple ulcer cases in this race should all be tried out on medical regime and surgery avoided if possi-

ble. Most Jews are able to carry out the medical treatment very well; consequently, you do not have to deal with the situation of being unable to carry out the treatment. They usually get fairly good results with medical treatment, and enough cannot be said here to avoid surgical interference in Jewish patients of duodenal ulcer. Why they are prone to recurrence I cannot say.

I would like to mention here in carrying out medical treatment, the Sippy method or modification is ideal with the exception of the alkali. At the present time it is a known fact that too much alkali produces a hypersecretion and really does more harm than good, but a moderate amount of alkali helps along with the diet. It is not necessary to give a patient 40 to 60 grains of alkali daily. That is entirely too much, and in such cases you will produce a hypersecretion. Instead of the patient improving, he will probably get worse. At the present day a new substance has been added to the list for treatment of duodenal ulcer, and that is mucin. This has been tried out on a large number of cases already and seems to be giving good results. I believe it is ideal and should be given to all ulcer cases, both medical and surgical. We are getting away from the idea of giving large doses of alkali.

Having discussed the medical idea of treatment of duodenal ulcer, I will now take up the surgical procedure. Here again we have to be guided according to the type of case we are dealing with. It has been a well-known fact for years that gastro-enterostomy has been the operation of choice for duodenal ulcer, but at the present time we are getting away from gastro-enterostomy and doing some form of pyloroplastic operation. Of course, if we have a patient with duodenal ulcer with obstruction, then gastro-enterostomy is the operation of choice, and, in this type of case, gives wonderful results. But the best type of operation for duodenal ulcer in a young individual who does not have any obstructive symptoms is excision of the ulcer and a pyloroplastic operation. Judd's method is the method of choice. He cuts out nearly four-fifths of the pyloric sphincter along with the ulcer. He does a pyloroplasty, which is really a gastro-duodenostomy. This type of operation gives wonderful results in these cases and is the operation of choice. A gastro-enterostomy should never be done in young individuals who are suffering from duodenal ulcer provided they have no obstructive symptoms, because these individuals are prone to develop gastrojejunal ulcers, and then you are in as much trouble as when you started. This type of operation gives wonderful results for patients suffering from duodenal ulcer who have to work hard for their living and are not able to carry out long courses of treatment. I would advise this type of operation in all cases, as above, who cannot afford medical treatment, because it gives them immediate relief and permanent relief.

There is very little chance of a recurrence at the anastomosis, although there may be a recurrence. I have had an opportunity of observing a large number of these cases for the past three years, and I have seen very rarely a recurrent ulcer in this type of operation. The point I wish to stress here is that a gastro-enterostomy should be avoided in young individuals if possible. It is not the operation of choice, but the excision of the ulcer and some form of pyloroplasty is the best procedure. In long-standing cases of duodenal ulcer, where there are obstructive symptoms, a gastro-enterostomy is the operation of choice. In older individuals who are suffering from duodenal ulcer, if they have symptoms of obstruction, a gastro-enterostomy is the operation of choice. In any case, young or old, where there has been a long-standing ulcer and there is considerable amount of scar tissue, induration, and very hard, a gastro-enterostomy is probably the best procedure. As the ulcer has been standing a long period of time and the walls of the duodenum are fibrous and indurated, it is very difficult to excise and do a gastroduodenostomy under such conditions.

Here I would like to mention the procedure in cases who have a definite history of duodenal ulcer. Even though the X-ray may be negative, he is justified in opening the duodenum and exploring the posterior wall. If he should find an ulcer on the posterior wall of the duodenum, the best procedure is to cauterize the ulcer and insert a few sutures. One must be careful in cauterizing this area, because it is easy to puncture right through the posterior wall of the duodenum and get in serious trouble. All that is necessary is cauterization and turning the ulcer in. This will give satisfactory results.

Another type of case in which surgery is

indicated is the silent bleeding duodenal ulcer which does not respond to medical treatment. Such cases should be explored, and even at exploration the ulcer is at times hard to locate. One may open the duodenum and explore the anterior and posterior wall and still be unable to locate the lesion. In this case, if there is any area of suspicion whatsoever or ulcerations, it should be excised or cauterized. At times in such cases one is not satisfied with what he finds or what he does, and he may close the opening which he has made in the duodenum without any further operative procedure and for some reason the patient stops bleeding. But in most cases of this type one is able to find a small ulcerated area which probably can account for the bleeding.

Another condition which we meet with at times is a condition of duodenitis which may even require surgical interference. The patient may have a clear history of ulcer, but the X-ray findings report a duodenitis instead of an ulcer. In such cases the symptoms may be identical with one suffering from duodenal ulcer. If medical regime has been tried and did not give relief, then surgery is indicated, particularly if it is in a hard-working man. On exploration of such cases, one is unable to locate an ulcer, but the duodenum feels somewhat indurated and thickened. The type of operation here is the one described above—Judd's excision and a gastroduodenostomy, removing at times as much as four-fifths of the pyloric sphincter. On studying the specimen one may not be able to find an ulcer, but a definite infiltration and inflammatory process in the wall of the duodenum and pyloric sphincter. The operation described will give relief. A gastro-enterostomy should be avoided in this type of case, because they are prone to gastrojejunal ulcer.

All cases operated upon for duodenal ulcer, of course, should be careful about the diet for several months. When such an operation as described above, where the Judd's excision and a gastroduodenostomy are done, such patients seem to be able to eat most anything without very much trouble. Of course, they are advised to be careful and modify their diet as best they possibly can. The point which I would like to emphasize is that, when this method of procedure is carried out in patients suffering from duodenal ulcer it gives them relief, and they are not forced to carry out a long medical procedure.

Here I would like to mention gastrojejunal ulcer. Gastrojejunal ulcer is a frequent condition—much more frequent than one anticipates. This is the main reason why gastro-enterostomy should not be done in young individuals if possible, or in any individual suffering from duodenal ulcer, provided he has no obstructive symptoms. The symptoms of gastrojejunal ulcer are usually very clear-cut. The patient will tell you that he now has pain opposite the umbilicus, which is referred to his back and is relieved by nothing. This pain is the most agonizing pain that a patient could have. Alkalies will not touch it. He may even require morphine for relief. If you take a careful history, one should not be confused in the diagnosis whether the X-ray shows it or not. Usually the X-ray will show an ulcer at the anastomosis.

Treatment for gastrojejunal ulcer is only one—surgery. Absolutely no use to try medical regime or any alkalies or any other medical procedure. Such a patient will not get relief until he has had surgery. The proper operation here is to take down the gastro-enterostomy, close the opening in the stomach and jejunum and leave things as they were to begin with. If the patient still has an ulcer in the duodenum, this may be excised at the same operation and a gastroduodenostomy performed. But usually the ulcer in this area has healed or looks very well and does not require any surgical intervention. When this procedure has been carried out, the patient usually gets along very well. The point I wish to stress very strongly is that when a patient once develops gastrojejunal ulcer and he is having considerable trouble, there is no use to attempt anything but surgery and try to arrange the structures anatomically as they were before any surgical interference was carried out. Young individuals are more prone to develop gastrojejunal ulcer than older people. In older people who have been suffering from a duodenal ulcer for some time, where they are hard and indurated and there might be some slight obstruction, a gastro-enterostomy is usually the operation of choice, and they may get along all right the rest of their lives; that is to say, they are not as likely to develop a gastrojejunal ulcer as the young individual.

In Jewish patients one must avoid a gastro-

enterostomy if possible or any other surgical interference for duodenal ulcer, because they are prone to recurrence. But in case one is forced to operate upon a Jewish patient and he is a young individual with a duodenal ulcer without obstruction, the operation of choice is the one described above—Judd's excision and gastroduodenostomy. Never do a gastro-enterostomy in these patients if it is avoidable. I have seen Jewish patients operated upon where a gastro-enterostomy had to be performed due to obstruction and the same individual before he left the hospital had developed a gastrojejunal ulcer. I have seen cases in which the ulcer had been excised without a gastro-enterostomy and a recurrence had taken place at the pyloroplastic operation. I have seen Jewish patients who have had as much as two-thirds of the stomach removed for multiple ulcers and a posterior Polya performed, and they returned with recurrence of ulcer at the anastomosis. So one cannot say enough about how much to avoid any surgical procedure in treating Jewish patients who are suffering from duodenal ulcer.

### Conclusions

1. Diagnosis of duodenal ulcer should be attempted by a roentgenologist.

2. Treat to suit the type of case which you meet.

3. Young individuals suffering from duodenal ulcer without obstruction who have to work for a living daily should have operative treatment, this consisting of Judd's excision and a gastroduodenostomy, removing at times as much as four-fifths of the pyloric sphincter. At times this much is not necessary.

4. Never do a gastro-enterostomy in individuals suffering from duodenal ulcer unless they have obstructive symptoms.

5. In individuals who are able financially to carry out a long course of medical treatment, such procedure is the procedure of choice and the results will be pleasing.

6. In long-standing cases of chronic, hard, indurated, duodenal ulcers, whether in young or old individuals, gastro-enterostomy in this particular type of case is the best procedure.

7. Avoid surgery of any kind in Jewish patients suffering with duodenal ulcer if possible. These patients do better on medical regime. They are prone to recurrences if surgery is carried out.

8. For silent, bleeding, duodenal ulcer, surgical procedure should be carried out.

9. A lesion on the posterior wall of the duodenum should be cauterized and turned in.

10. In cases of severe duodenitis which do not get relief from medical treatment, operation should be carried out, using Judd's method of excision and gastroduodenostomy, excising at least four-fifths or about that much of the pyloric sphincter.

11. Patients who have had an excision of the ulcer and gastroduodenostomy performed, cases treated by Judd's method, should be told, in case they should have trouble later on and some one should take an X-ray, that a deformity from this type of operation may produce a deformity which resembles an ulcer in the X-ray.

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## DRAMA ANTHELMINTICA: A Play without Dialogue.*

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Dramatis Personae

*Physician*—The hero
*Patients*—Injured individuals, not necessarily the heroines, but, like heroines, persons to be rescued.
*Parasites*—The villians
*Persons, attendants, nurses and internes.* Necessary for the action of the play

Properties

*Parasiticides*—The hero's anthelmintic weapons
*Purgatives*—The hero's weapons for the defense of the patient.

Time

The present

Place

Not specified, but obviously selected, as for the location of a mystery story, more with reference to what is needed than with reference to what might happen in any one place in any one day.

### Act I. Diagnosis

The action takes place in a physician's office appropriately equipped.

#### Scene 1. Ascariasis

A physician seated at a desk looks up and confronts a patient who has entered. This situation is the epitome and essential of medical practice; a trained man with a broad background of general information confronts an individual patient, and must now apply his general knowledge and experience to the special case of this patient, exercising his judgment to the best of his ability.

*A lecture given in the winter of 1933 at the Naval Medical School, Army Medical School, Howard University Medical School, and the Smith-Reed-Russell Club of George Washington Medical School.

A laboratory report on the physician's desk shows that this patient has ascariasis, ascarid eggs having been found in the stool; eosinophilia, 10 per cent. This clarifies the matter of diagnosis, as there is no definite clinical picture dependably associated with ascariasis. This patient's history shows only abdominal discomfort with occasional marked pain; and such a history, or any one of dozens of different histories, would show only symptoms that might be attributed to any one of many causes, but the fecal examination points to ascarids in this case as the probable cause of the trouble.

The drugs that might be used in this case are: Chenopodium, 1. c.c., immediately preceded or followed by castor oil, 30 c.c.; or santonin, 5 grains, followed four hours later by Glauber's salts (30 c.c. saturated solution plus 60 c.c. water) or castor oil 30 c.c.; or santonin with calomel, 1 to 2 grains of each, daily, for a week; or hexylresorcinol, 0.6 gram, followed by mineral oil, and treatment repeated in one to seven days.

Before electing any of these drugs, the physician looks into the matter of contraindications. Those for chenopodium include: Gastro-enteritis, acute or chronic alcoholism, febrile conditions, and pregnancy; chronic constipation, calling for preliminary purgation which is necessary only in cases of constipation or tapeworm infestation; and extreme age, youth or debility, calling for diminished doses, at least, and sometimes for the selection of a safer or milder drug. The contraindications for santonin include nervous disorders, such as epilepsy. Those for hexylresorcinol are unknown, but since the drug may produce superficial ulcers it may be regarded at this time as contraindicated in hemophilia and cases of gastric or intestinal ulcer.

Having satisfied himself as to the presence or absence of contraindications, the physician tells the patient to eat a light meal that evening, preferably soup and bread or crackers, with coffee or tea, to avoid alcohol, fats, oils, cream and butter, and to report at the hospital, without breakfast except for coffee, at 8:00 A. M. the next day for treatment.

### SCENE 2. ANCYLOSTOMIASIS

A second patient enters. The laboratory report on the physician's desk shows the presence of hookworm eggs on fecal examination of this patient; eosinophilia present. An examination of the patient shows the clinical picture associated with hookworm disease: anemia manifested in the pallor of the conjunctiva and lack of color in the face and ears, abdominal discomfort, condition of underweight, and a history of ground itch.

The drugs that might be used are: Carbon tetrachloride, 3 c.c; tetrachlorethylene, 3 to 4 c.c.; or chenopodium, 10 minims given three times at hour intervals for a total of 30 minims (2 c.c.); the carbon tetrachloride or tetrachlorethylene to be given with salts, and the last dose of chenopodium to be followed one hour later by salts.

The physician considers the patient for contraindications. Those for carbon tetrachloride include: Ascariasis (eliminated in this case by a fecal examination negative for ascarid eggs), acute or chronic alcoholism, low blood calcium (largely a consideration of diet with reference to such things as milk; high carbohydrate and low meat diets appear to lessen the danger from this drug), and febrile conditions. No contraindications are yet known for tetrachlorethylene, but there is one case on record of unconsciousness following its use on a syphilic patient twenty-eight years old and weighing 100 pounds, so one may expect some such result in some syphilitic cases. The contraindications for chenopodium have been given.

Having satisfied himself as to contraindications, the physician gives the patient the same instructions as those given the first patient.

### SCENE 3. ASCARIASIS AND ANCYLOSTOMIASIS

A third patient enters. The laboratory report shows that this patient has both ascarids and hookworms. The physical condition of the patient is somewhat similar to that of the previous patient, but the symptoms are more marked as regards the general lowering of the physical and mental level of well being.

The drugs that might be used are: A mixture of one part by volume of chenopodium and three parts of carbon tetrachloride or tetrachlorethylene, to be given in one 3 c.c. dose; or hexylresorcinol, 0.6 gram, followed by mineral oil, and treatment repeated in one to seven days.

Contraindications for these drugs are as already given, except that ascariasis as a contraindication for carbon tetrachloride is disregarded when chenopodium is given with the carbon tetrachloride.

Having satisfied himself in regard to con-

traindications, the physician gives the patient the same instructions given the first patient.

SCENE 4. TRICHURIASIS

A fourth patient enters. The laboratory report shows that this patient has whipworms. The patient gives a history suggestive of some degree of appendicitis, with some pain and rigidity of the abdominal wall in the cecal region.

The drugs that might be used are: Leche de higueron, the sap or latex of a tropical fig, 30 c.c., given once or each morning for two or three days, followed one hour later by salts; or santonin with calomel, 1 to 2 grains of each, daily for a week, treatment to be given alternate weeks as long as fecal examination shows it to be necessary. Leche de higueron has the advantage that it almost always removes some whipworms at each dose, something other drugs will not do, but has the disadvantage that, although it is marketed with a preservative so that it can be obtained outside of the tropics, where it is usually used fresh, it is not readily obtained and must be provided in advance of need for it. Whipworms are very vulnerable to many drugs, but difficult to remove because of the difficulty of getting these drugs into the cecum in contact with the worms. The bulk of the dose of leche de higueron is probably responsible for its value, in that part of this large dose succeeds in reaching the worms. The repeated doses of santonin, a drug which can be given in repeated doses because it is not an intestinal irritant, give some assurance that sooner or later some of the santonin will enter the cecum, and in time remove the worms.

The physician considers the contraindications for these drugs. Special contraindications are not known for leche de higueron, but there has been at least one fatality from the use of this drug, so the general contraindications for anthelmintics are considered. The general contraindications include: Gastro-enteritis, febrile and debilitating conditions, extreme youth or old age, alcoholism, and pronounced chronic constipation. Contraindications for santonin have already been given.

The patient is given the same instructions as were given the first patient.

SCENE 5. OXYURIASIS

A fifth patient enters. The laboratory report is negative for parasite eggs. The patient gives a history of anal pruritis, especially pronounced at night, and is depressed and irritable, partly as a result of the consequent annoyance, embarrassment and loss of sleep. The physician takes the patient to his examination room off the stage. Presently they return. An examination has shown that the margin of the anus is red and congested, and has on it a number of pronounced red spots; a swab of the anal region and of the perineum anterior to the anus has shown the presence of the pinworm eggs, characteristically flattened on one side; and an enema has brought away some gravid female worms from the rectum.

The selection of a drug to remove pinworms presents some difficulties, since not enough work has been done to ascertain definitely which drug is the most effective for the purpose, nor how effective are any of the drugs used. Hall and Augustine, in Nicaragua, removed 5,544 pinworms from a patient with a 4 c.c. dose of tetrachlorethylene, an average of about ninety worms removed by each minim of the drug, 1,191 pinworms from another patient with a 3 c.c. dose, an average of about twenty-six worms per minim, and smaller numbers from other patients with 3 and 4 c.c. doses. These findings indicate that this drug deserves further test and consideration along with the other drugs used to remove pinworms. These other drugs include: Santonin and calomel as for ascarids; aluminum acetate, 1 gm., t.i.d.; and bismuth subcarbonate, 5 gm., b.i.d. for five days, the treatment alternately suspended and repeated in five day series, for three series of treatments.

Contraindications for aluminum acetate would include acute gastro-enteritis, or nephritis and other kidney diseases. In the doses employed, there appear to be no known contraindications for bismuth subcarbonate.

The physician elects to use tetrachlorethylene as the first line of treatment, and the patient is given the same instructions as the first patient received.

SCENE 6. STRONGYLOIDOSIS

A sixth patient enters. The laboratory report shows the presence of *Strongyloides* larvae in the feces. The history of the patient shows the presence of a diarrhea and some degree of neurasthenia.

The one drug to be considered here, in the present state of our knowledge, is gentian vio-

let, to be given as an enteric-coated preparation in doses of 1 grain, t.i.d. before meals, for one week.

This drug affects the heart and blood vessels in the same manner as digitalis, and, for the time being, the same contraindications as for digitalis should be kept in mind, and the condition of the patient's heart taken into consideration.

The patient is given the medicine with instructions as to how it is to be used, and is told to report at the hospital daily for examination.

SCENE 7. TRICHINOSIS

A seventh person enters, but this is not a patient. It is a relative of some sick individuals, the sick persons being unable to come to the physician. According to this relative, the sick persons have a history of severe diarrhea following a big family dinner on the farm after hog-killing time about two weeks previously. Six of seven persons, excluding only the visitor to the physician, have had this diarrhea, and now they are beginning to complain of severe muscular pains, including pain in the eyes. The physician calls in an attendant and dispatches him to the family with instructions as to procedure. Meanwhile he continues to question the visitor. It develops that after killing a hog, the mother of the family made up a batch of farm sausage, seasoning it to taste, and sampling the raw sausage repeatedly as she seasoned it. She is the sickest of all of the persons involved. The sausage was cooked, but as the family likes its sausage not too well done, it was not cooked very thoroughly. Everyone at the dinner partook heartily of the sausage except the visitor who has some gastric ailment and has found that "sausage does not agree with her."

Presently the attendant comes in and reports. He has examined the sick persons and finds in some a marked suborbital edema. The temperatures ranged from 103° to 105° F. He has brought back some of the sausage. He has also taken blood smears from the patients, and on a rapid examination he finds in these a pronounced eosinophilia which he estimates at from 30 to 40 per cent. With several case histories of this sort and with these laboratory findings, all from one family, the physician sees no necessity for doing a Widal test for typhoid, or a harpoon test or examination of a large blood sample for trichina larvae. The diagnosis is trichinosis, but as a final check he asks the attendant to make a microscopic examination of the muscle fibers from a small sample of the sausage, holding the rest for digestion in pepsin and hydrochloric acid and subsequent examination if the microscopic examination proves negative. The attendant goes out and presently returns with the information that the meat from the sausage shows an abundance of encysted trichinae, thus confirming the diagnosis.

These cases will require nursing and symptomatic treatment, and we have no anthelmintic treatment which can be recommended as of known value. Even in the first stage of diarrhea, while adult worms were present in the intestine, it would have been impossible to use any anthelmintic with any assurance that it was of value, as all careful tests of anthelmintics on experiment animals in this stage of the disease have shown the drugs to be ineffective in removing them. At the present stage, with the larvae in the muscles, there are no known drugs even suspected of being capable of killing these larvae. The period of greatest danger to these patients is still ahead, death, in fatal cases, usually occurring between the fourth and sixth weeks. Treatment calls for the daily presence of the physician, and attention to such conditions as pneumonia and other complications as they develop.

SCENE 8. TAENIASIS

The seventh patient enters. His laboratory chart shows the presence of tapeworm eggs, evidently of a species of *Taenia*, in the feces, and he gives a history of the presence of tapeworm segments found in the bed in the morning and in his underwear when he removes it in the evening. He feels unwell, has some abdominal discomfort, and occasionally has the sensation of having stepped into an elevator which abruptly goes down with him. He admits that he is fond of rare steaks and rare roast beef. The diagnosis is taeniasis, presumably an infestation with *Taenia saginata*, the beef tapeworm.

The drugs to be considered in connection with tapeworm treatments include: carbon tetrachloride, administered in the same dose and manner as for hookworms; Tanret's pelletierine, administered as directed on the label; and oleoresin of male fern, 1.5 to 2.5 fluid drams, ¼ of the dose administered every fifteen minutes with 10 c.c. of castor oil each time, or

a saline purgative administered one hour after the last dose. Of these, carbon tetrachloride is the cheapest and the least nauseating, and is apparently as effective as the others against *Taenia* in man, although it is of no value against tapeworms in domesticated animals. Tanret's pelletierine is the most expensive, is less nauseating than male fern, and is quite effective.

The physician considers the contraindications for these drugs as follows: Those for carbon tetrachloride as given. Those for Tanret's pelletierine are those for anthelmintics in general. Those for male fern are gastroenteritis, nephritis, febrile conditions, and pregnancy.

Having satisfied himself in regard to possible contraindications, the physician gives the patient the same directions as were given the first patient, but in addition directs that the patient take a dose of Glauber's salts, 30 c.c. of saturated solution, to which 60 c.c. of water is added, that evening, the object being to remove any mucus from around the head of the tapeworm if possible, thereby exposing it better to the action of the anthelmintic.

SCENE 9. FILARIASIS (WUCHERERIA BANCROFTI)

The eighth patient enters. The laboratory report shows the presence of the larvae of *W. bancrofti* in the patient's blood at night. The patient has a history of having lived in the tropics. His legs are somewhat swollen and the skin on these parts is thickened, indurated, and more or less painful; some lymphangitis is evident.

The physician has no established anthelmintic medication for this form of filariasis. Most of the drugs which have appeared to give good results have usually been found ineffective on further test, so far as the permanent disappearance of the larvae from the blood is concerned. However, clinical improvement has been reported after the following: Salvarsan, 0.3 gm., intramuscularly, once or twice; Phenokoll, 1 gm., four times daily for three days, then a one-day interval, and treatment repeated for three days. Anything the physician may use must be on an experimental basis, not on an established basis. However, the symptoms of this form of filariasis appear to be due to a complex of worms weakening tissues and producing an environment favorable for bacteria and other microorganisms, and in this connection great personal cleanliness, especially in regard to the feet, including measures to keep down and prevent fungous infections between the toes, and prompt and proper attention to injuries to prevent infection, appear to be of great value in keeping down clinical manifestations of the disease.

In view of the experimental nature of treatment for this form of filariasis, our practitioner, who is not in a position to expend time on devising treatments for filariasis on the small number of cases he will ever see, makes recommendations for cleanliness and care, suggesting that if the symptoms become aggravated the patient return for consultation.

SCENE 10. FILARIASIS (LOA LOA)

The ninth patient enters. His laboratory chart shows the presence of the larvae of *Loa loa* in the patient's blood during the day. The history of the case shows previous residence in the tropics, and subsequently the occasional occurrence of Calabar swellings, an ambulant edema occurring from time to time at different portions of the body, with some itching, and with a serpentine contour visible when this occurs at places where the skin is thin.

No anthelmintic treatment has been established for infestations with this worm. Neosalvarsan in ten treatments over a period of two months, the dose increased gradually from 15 cgm. to 90 cgm., has been reported as effective in one case, but "one swallow does not make a summer" in anthelmintic medication. Stibenyl is said to kill the worm, but more evidence is needed on this point. Occasionally the worm enters the eye and can be removed surgically.

Under the circumstances, our practitioner sends the patient home with instructions to report any unfavorable developments, or any opportunity to remove the worm surgically when it may be accessible.

SCENE 11. FILARIASIS (DRACUNCULUS MEDINENSIS)

The tenth patient enters. The patient has a history of previous residence in the tropics, and the formation subsequently of an indurated cord on one leg. Recently a sore almost an inch in diameter has formed in this region, and an examination of this discloses in it the head of the worm.

Novarsenobenzol is indicated for use in the destruction of this worm. It can be given by injection in four doses at eight-day intervals,

the initial dose being 15 cgm., and the subsequent doses 30 cgm. This is said to be followed by abscess formation, with rapid and complete cure following the removal of the dead worms. Emily had good results with injection of 1:1000 corrosive sublimate solution into the sore along the course of the worm, the worm being removed the next day. Béclère has removed one of these worms by the use of chloroform on it before attempting extraction.

Novarsenobenzol must always be used with caution. Lesions of the heart, liver and kidneys are contraindications, and some patients have an idiosyncratic intolerance.

Our physician orders the patient to hospital for treatment the following day and as long afterward as necessary.

SCENE 12. SCHISTOSOMIASIS

The eleventh patient enters. The laboratory report shows the presence in the feces, but not in the urine, of schistosome eggs with a long lateral spine. The patient has a history of residence in Puerto Rico. No hematuria. The patient has had abdominal pain and dysenteric symptoms, and is anemic and thin.

There are three drugs available for treatment. Tartar emetic intravenously, or emetin hypodermically or intramuscularly, or Fouadin intramuscularly. For tartar emetic, a stock solution is made up at the rate of 1 grain in 20 minims of distilled water; every other day doses are given of ½ grain, 1 grain, 1½ grains, 2 grains, 2½ grains, and then 2½ grains, up to a total of 30 grains, if necessary, for one course of treatment; usually 20 to 30 grains are necessary. Emetin is given in doses of 3 cgm. hypodermically, b.i.d., for ten days, or ½ grain to 2 grains intramuscularly daily for three days, and then three times a week for three weeks. Fouadin is supplied in a 6 3 per cent solution in ampoules, and is injected intramuscularly as follows: 1st day, 1.5 c.c.; 2nd day, 3.5 c.c.; 3rd day, 5 c.c.; every other day thereafter, 5 c.c., to a total of nine doses or 40 c.c., for the entire treatment.

The physician considers as contraindications for tartar emetic the following things: Diseases of heart, lungs, kidneys or liver, and low metabolic conditions. He keeps in mind that reports show ten deaths in 1,000 treatments, or 1 per cent. He considers as contraindications for emetin, heart diseases, especially those involving the myocardium. Both drugs are distinctly toxic, and the injection of tartar emetic calls for good technic and great caution. Tartar emetic is a local irritant and a depressant; emetin may cause diarrhea, neuritis, circulatory failure, and toxic conditions. Kidney diseases may be contraindications for Fouadin.

This patient is instructed to enter hospital the following day for a series of treatments.

SCENE 13. FASCIOLOPSIASIS

The twelfth patient enters. The laboratory examination shows the presence of large fluke eggs which might be those of *Fasciolopsis buski*. The patient has a history of residence in China. There is an evident anemia with some edema. He complains of generalized abdominal pain. The findings point to *Fasciolopsis* as the cause of his troubles.

The two drugs recommended for the removal of this fluke are carbon tetrachloride and Beta-naphthol, the former as for hookworm, and the latter in a dose of four grams.

An examination for contraindications adds to those for carbon tetrachloride, a consideration of malaria, anemia and pregnancy as contraindications for Beta-naphthol.

The patient is given the same instructions as those for the first patient.

SCENE 14. CLONORCHIASIS

The thirteenth patient enters. The laboratory report shows small fluke eggs present in the feces. The patient has lived in China. He complains of abdominal discomfort and pain and diarrhea. On palpation there is a somewhat enlarged liver. Moderate anemia and some icterus are evident. The case is diagnosed as probably hepatic distomiasis due to *Clonorchis sinensis*.

The preferred drugs for this treatment are the penta- and hexa-methyl rosanilins (gentian violet, crystal violet, and methyl violet). These are given in enteric-coated preparations, in doses of 30 mg. every other day for a total of not more than 300 mg. per kilogram of body weight; or may be given in 0.5 per cent solution in amounts of 40 c.c. intravenously every other day for a total of not more than 6 grams of the dye.

The contraindications considered by the physician are those already given for gentian violet. Too heavy dose may prove fatal, and the patient is told to report at the hospital for his treatments in order to keep him under observation by a daily check on his condition.

SCENE 15. LUNG FLUKE

The fourteenth patient enters. His laboratory chart shows the presence of fluke eggs and some blood in the sputum. The patient has lived in Japan. There is a history of hemoptysis. The diagnosis is infestation with lung flukes, *Paragonimus westermani.*

There is no established anthelmintic treatment for this condition and the only known treatment is symptomatic.

The patient is given such treatment as his conditions warrant, given a regime intended to protect him against unfavorable developments, and told to report any unfavorable change in condition.

SCENE 16. SOMATIC TAENIASIS

The fifteenth patient enters. His laboratory examination shows nothing indicative of parasitism other than a moderate eosinophilia. The patient complains of pain under the right shoulder and a sensation of weight in the hypochondrium. The liver is enlarged and readily palpable. When one hand is placed flat over it and struck with the other hand, there is a peculiar vibration which leads to a diagnosis of hydatid of the liver, this vibration resulting from the motion set up in an elastic cyst filled with fluid. The patient admits that he has kept dogs in the country and that they were allowed to feed on diseased viscera.

There is no anthelmintic known to be effective in killing larval tapeworms, whether hydatids or cysticerci. The only treatment, when treatment is necessary, as it is in the case of hydatid, is surgical.

The patient is sent to hospital for confirmatory diagnosis, and for operation if the diagnosis is confirmed, and there are no contraindications for the operation.

## ACT II. TREATMENT

*The action takes place in a hospital*

SCENE 1. ADMINISTRATION OF THE DRUG

The patients enter one by one, and as each appears the physician questions him or her as to whether instructions have been carried out. Did the patient confine himself to the form of evening meal prescribed? Has he had any breakfast? Has he avoided alcohol, fats, oil, cream, butter, and similar things? Did the patient with a tapeworm and the constipated patients take the prescribed purgative? Has anything occurred overnight to alter the patient's general condition, such as the occurrence of fever, a malarial attack, etc.? If the patient, on close questioning, admits that he has disregarded instructions in any respect, or if any complications in his condition have arisen overnight, the patient is sent home with appropriate instructions as to what to do and when to report again.

The patients who have followed instructions, and who are there for a treatment which will require only one day, are given the treatment which the physician has elected in the light of their physical condition, and in the dose appropriate to their condition, ages, etc., and are sent to rooms where they can lie or sit down as they find it most comfortable. Provisions are made for collecting all stools, as these are to be examined. They are told that they can have coffee if they feel the desire for it. Those who do not receive the purgative with the drug are told when to report for it, and those who are taking divided doses are told when to report for the next treatment.

SCENE 2. THE CHECK ON PURGATION

Since purgation is the most important of all our measures for the safety of the patient after anthelmintic treatment, all patients are told to report to the physician or a nurse at the end of four hours, at which time they are asked whether the bowels have moved. Meanwhile a check is made on the containers provided for feces. As the patients come in, the physician or nurse questions them on this point, and if the bowels have not moved the patient is given a dose of 90 c.c. of Glauber's salt, equivalent to 30 c.c. of saturated solution to which 60 c.c. of water has been added, and the patient is told to return and report in another four hours.

About one-fourth of the patients complain of having had symptoms of headache, nausea or dizziness, and these reports may be expected regardless of the drug used, but in the cases of those who have had a bowel movement, the symptoms have usually disappeared as soon as the bowels moved. These symptoms are commonly present in a fourth or more of any series of patients treated with anthelmintics, and commonly disappear as soon as purgation occurs. One of the patients who has received santonin complains of yellow or green vision, but this will prove transient and need occasion no worry.

Four hours later, the patients report again to the physician or nurse. In one case there has been no bowel movement since the treatment was given. This patient is given another dose of salts and sent to a ward with a nurse or interne who is instructed to administer an enema, use abdominal massage, and take any other measures necessary to ensure a prompt evacuation of the bowels. Until this is assured, there is some likelihood that the patient will develop unpleasant conditions, and may become another fatality. Where the patients' statement and a check on fecal containers show that the patient has had an adequate bowel movement, and has developed no unpleasant symptoms, and that the tapeworm patient has now passed the tapeworm with the head, the patients are given instructions for the future. This includes instructions to report for another examination for parasites two weeks later. Since wandering larvae present in the body at the time of treatment, may return to the digestive tract and mature later, some patients are told that a reexamination two months later may also be necessary.

### Act III. Prophylaxis

*The action takes place in the physician's office, as in Act I*

#### scene 1. prophylaxis for patients

Before leaving, the patients file through the physician's office for advice as to preventing a recurrence of parasitism.

Patient No. 1, case of ascariasis, enters. The physician advises this patient to be careful about contamination with ascarid eggs in soil in unsanitated rural districts, and about other possible sources of ascariasis. Exit patient.

Enter patient No. 2, case of hookworm disease. This patient receives somewhat the same advice as No. 1, with additional advice relative to the danger of going barefoot on contaminated areas, handling infected soil without gloves, and similar things. Exit No. 2.

Enter patient No. 3, case of ascariasis and hookworm disease. This patient receives the same advice as Nos. 1 and 2. Exit No. 3.

Enter patient No. 4, case of whipworm infestation. He receives the same advice as No. 1. Exit No. 4.

Enter patient No. 5, case of pinworm infestation. This patient requires a lot of advice and further attention from the physician. He is told to use copious enemas every night before retiring to remove the gravid pinworms which may be left and which will come to the rectum preparatory to migrating through the anus onto the perineum at night, or being passed in the feces. He is cautioned to bathe daily and to sleep by himself to avoid infecting others. His underwear, night clothes and bedding are to receive special attention in laundering, in order to destroy any pinworm eggs that may be present. If evidence of persistent pinworm infestation is found later, he is to return for further treatment. Exit patient No. 5.

Enter patient No. 6, case of strongyloidosis. The patient receives the same advice as No. 1, the ascariasis case. Also he will have to continue under treatment and report as instructed. Exit No. 6.

The trichinosis cases are not present for instruction and some of them may not live to profit by good advice on the subject. Those who survive will probably be willing to eat no more pork that is not well cooked. The physician will also advise them to raise their pigs under the swine sanitation system in the future. Under this system the pigs are farrowed in clean farrowing pens by sows which have been cleaned and put in the clean pens just before farrowing time, and moved to fields sown to forage crops and never used since that time by other pigs. Under these conditions, pigs will not eat rats, since the rats live around the cribs, outhouses and pens, and not in the fields; they will not eat other pigs, since farmers intelligent enough to use this system of raising pigs will not leave carcasses lying around; and they will not eat infected pork scraps because under this system they will not be fed table scraps, swill or garbage containing such pork scraps. In this way they will be cut off from the known sources of infection with trichinae, this sanitation system being probably the best preventive measure for trichinosis that we have.

Enter patient No. 7, case of tapeworm infestation. By now this patient is probably in the mood either to have his steaks and roasts well cooked, or at least to see that they bear the stamp of Federal meat inspection or the stamp of some equivalent veterinary inspection. Not every meat inspection stamp can be taken seriously as representing something better than a trivial and preposterous pretense at

inspection, so if the patient wishes to avoid more tapeworms and still eat rare beef, he should know something about how his beef is inspected. Exit No. 7.

Our patients No. 8, case of *Wuchereria bancrofti*, and No. 9, case of *Loa loa*, are home. The first will be told that if he returns to the tropics he is to beware of mosquito bites, since mosquitoes convey *Wuchereria bancrofti*, and the second will be told that under similar conditions he is to beware of the bites of such flies as *Chrysops*.

Patient No. 10, case of dracunculosis, is still in hospital. He will be told that if he returns to any tropical area where the Guinea worm occurs, he is to avoid drinking water that might contain infested *Cyclops*, and avoid bathing in streams or lakes in infected areas. He will probably concur in both these suggestions.

Patient No. 11, case of schistosomiasis, is in hospital. He will be told to avoid drinking water, other than boiled water, in infested areas, and to avoid bathing in streams or pools in such areas. He, also, will probably do this.

Enter patient No. 12, case of fasciolopsiasis. He is told to avoid unboiled water and uncooked vegetables in the countries where *Fasciolopsis* occurs, unless he is very, very sure that there is no chance of either of them being in any way contaminated with excrement, and that even then he had better avoid them. Exit No. 12.

Patient No. 13, case of clonorchiasis, will be told not to eat uncooked fish. This will protect him against *Clonorchis* and also against *Diphyllobothrium latum* and other undesirable guests.

Patient No. 14, case of lung fluke, is not present. He will be told in time that he should not eat raw crab meat.

Patient No. 15 will be told, after his operation, to treat his dogs with less familiarity, and to prevent their eating the raw viscera of animals unless careful inspection shows the viscera to be free from disease conditions. He may take this advice after his experience.

SCENE 2. PROPHYLAXIS FOR PHYSICIANS

As the last patient goes out, the physician draws a long breath, lights his pipe, picks up the telephone, and calls a number. "Hello, Bill. What about a game of golf? Good. I'll meet you at the club in twenty minutes. Right-o."

# Woman's Auxiliary, to the Medical Society of Va.

*President*—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.
*President-Elect*—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.
*Recording Secretary*—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.
*Corresponding Secretary*—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.
*Treasurer*—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

## An Invitation to Richmond.

If you have never been to Richmond, haven't you always wanted to come? And if you *have* been to Richmond, haven't you always just *longed* to come back? Well, this is the time to make that dreamed of trip. In addition to the lovely old landmarks of history and tradition you have seen before or read about, we are able now to visit lovely restored Williamsburg, with its governor's palace and House of Burgesses standing again "with the glory that was Greece and the grandeur that was Rome." Many of the beautiful old homes have been restored and they with their gardens are enchanting. The whole atmosphere is saturated with the spirit of two centuries ago.

Only a few miles from Williamsburg is old Jamestown with its air of brooding sadness as one walks among the bits of construction which are all that remain of the efforts of those first brave men who came to Virginia.

A trip to these interesting shrines is included in the entertainment being planned by the doctors' wives of Richmond for the wives of doctors who will come to the Southern Medical Association in November. Committees have been busy with plans for weeks and a most cordial welcome awaits you. We urge you to come.

SYLVIA BURNS SANGER,
(Mrs. W. T. Sanger).
*Press Chairman of Womans' Committee.*

### ENTERTAINMENT FOR LADIES

Plans for the entertainment of the ladies who will attend the Southern Medical Association in November have been occupying the minds of Richmond women for weeks. The program is a most interesting one.

Mrs. Douglas VanderHoof will open her

home on Tuesday afternoon for a tea to be given in honor of the visiting women. The transportation is in charge of Miss Elizabeth Peple, who will be glad for volunteers who are willing to furnish and drive their cars.

A luncheon has been planned for the women guests at the Jefferson Hotel on Wednesday, November 15th. All Richmond women are asked to secure their tickets before that date, as the committee must know in advance the approximate number expected. Tickets for all persons attending will be seventy-five cents.

An entertainment of special interest is the trip to Williamsburg on Thursday, November 16th. Jamestown will also be visited. This sight-seeing trip is in charge of Mrs. Francis W. Upshur. The guests will be furnished transportation by private cars.

A golf tournament for the ladies will be held on Friday afternoon, November 17th. Those interested may communicate with Mrs. J. W. Hannabass, 3003 Seminary Avenue.

### The Woman's Auxiliary to the Post-Graduate Medical Society

Met Wednesday, October 11th, with Mrs. Henry Martin Snead, President, presiding. This Auxiliary is planning a shower of hospital supplies from the churches in town for the first of the year. There was a donation from its treasury for blankets to meet an urgent need. Much interest was manifested and there was good attendance at the meeting.

### Richmond News.

The Richmond Auxiliary will again serve lunch for the five-point children who are annually given a trip to Richmond from their respective counties, in recognition of their superior physical fitness. This event is under the leadership of Mrs. John Weitzel, who will be happy for donations of food or help in serving this luncheon. More than one hundred were served at this affair last year.

### Auxiliary to the Norfolk County Medical Society.

The first meeting of the season was held October 3rd. Delegates were appointed to attend the State Convention in Lynchburg, October 24th.

Mrs. Southgate Leigh read a very interesting report of the Woman's Auxiliary meeting at Milwaukee, in June, when the American Medical Association met. The Seaboard Medical Society will meet in Norfolk in December, and plans were made for entertaining the wives of the members at that time.

A drive to get subscriptions to *Hygeia* will be put on before the State meeting. The Auxiliary has endeavored to obtain pictures of all past-presidents of the Norfolk Medical Society, to be used in the Medical Hall. These will be hung very soon. The Auxiliary has also gotten draperies for the windows, thus adding a great deal to the appearance of the room.

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# Book Announcements

**Food, Nutrition and Health.** By E. V. McCOLLUM, Ph. D., Sc.D., and J. ERNESTINE BECKER, M. A., Professor, and Associate, of Biochemistry, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md. Third Edition. Rewritten. Published by McCollum and Becker, Baltimore, Md. 1933. 12mo. of 146 pages. Cloth. Price $1.50 postpaid.

**Procedures in Tuberculosis Control for the Dispensary, Home and Sanatorium.** By BENJAMIN GOLDBERG, M. D., F. A. C. P., F. A. P. H. A., Associate Professor of Medicine, University of Illinois; etc. With a Chapter on Sanatorium Planning by THOMAS B. KIDNER, New York, and An Introduction by DAVID J. DAVIS, M. D., Ph. D., Dean of the College of Medicine, University of Illinois. Octavo of 373 pages. Fifty-four illustrations. Philadelphia, F. A. Davis Company. 1933. Cloth. Price $4.00 net.

**Food in Health and Disease.** Preparation, Physiological Action and Therapeutic Value. By KATHERINE MITCHELL THOMA, B. A., Director of Dietetics, Michael Reese Hospital, Chicago. Philadelphia. F. A. Davis Company. 1933. Octavo of 370 pages. Cloth. Price $2.75 net.

**The Technic of Local Anesthesia.** By ARTHUR E. HERTZLER, A. M., M. D., Ph. D., LL. D., F. A. C. S., Professor of Surgery in the University of Kansas; Surgeon to the Halstead Hospital, Halstead, Kans.; etc. Fifth Edition. St. Louis. The C. V. Mosby Company. 1933. Octavo of 292 pages. With 148 illustrations. Cloth. Price $5.00.

**Surgery of the Stomach and Duodenum.** By J. SHELTON HORSLEY, M. D., F. A. C. S., LL. D., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. St. Louis. The C. V. Mosby Company. 1933. Octavo of 260 pages. With 136 illustrations by Miss Helen Lorraine. Cloth. Price, $7.50.

**Nervous Breakdown: Its Cause and Cure.** By W. BERAN WOLFE, M. D., Director the Community Church Mental Hygiene Clinic, New York. Farrar & Rinehart, Inc. New York. 1933. Octavo of 240-xv pages. Cloth. Price, $2.50.

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# Editorial

## The Internist and the Psychiatrist.

The Internist as His Own Psychiatrist is the title of a discussion by Dr. Alfred Stengel, of Philadelphia, read at the Montreal meeting of the American College of Physicians, February last, that supports an important conception in present-day adjustments of medical practice. Here one finds a general urge that the internist arouse himself to a new interest in the brain manifestations of general diseases. The tardiness in appreciation and study on the part of the general clinician of the display of psychic disturbances of general disease is indeed apparent. Whether this is entirely a fault to be laid at the door of the internist is a question that should be discussed pro and con. Often, it may be true, that as soon as some brain disturbance appears in symptomatology, whether it be delusions, hallucinations, delirium, or ravings, the picture becomes so predominatingly psychic that psychiatrists seem more required than the clinician. But is this true? Modern medicine recognizes the reciprocal relations of general medicine and manifestations in psycho-neurologic conditions. Psychiatry and neurology have built up a large and impressive field of knowledge. In terminology, in diagnosis, in physiology, in pathology, and in amplifications of the vast field of insanity and sub-normal mentality, this great field of medicine has amassed rich findings. There must be no back-step in this progress and every relationship that will tend to increase and add to new methods of treatment must be encouraged. It seems to be obvious, however, that internal medicine must move forward a bit beyond the dominating influences of the school of thought that limits its action to the passive ground of pathological anatomy. Internal medicine must more eagerly grasp the early signs of disease as projected upon the clinical screen by disturbances of body chemistry and physiology. Internal medicine must swing away somewhat from the rockbound morphological conception and move with freedom in the upper strata of modern clinical physiology. In such a fashion it may be possible for the disorders of the blood, that course the upper reaches of the cerebral circulation bathing the gray cells of the brain, loaded with the toxins incident to an advanced nephritis, for instance, to be interpreted in relation to general disease.

Space does not permit of elaboration here but the Stengel article bears out the contention with convincing clearness that "the physician's relation to all nervous and mental backgrounds of disease, as well as the psycho-neurologic consequences of disease falling under his care" is a real need of the day and times in modern medical practice. In the by effects and complications of such diseases as pneumonia, typhoid fever, "cardiac psychoses," cerebral arteriosclerosis, gout, drug effects and addic-

tions, nephritis, endocrine disturbances, and pathological changes, and in syphilitic pathology, one may find for the general physician frequent possibilities for an urgent, early understanding of mental and neurological symptoms. A. G. B.

**Our New President.**

When it became officially known that the Medical Society of Virginia had chosen Dr. Robley Dunglison Bates as its president-elect, there was ample cause for general satisfaction; the Society, by this action, assured itself of having as its leader a man fully deserving of the honor accorded him, and a man whose record completely justified its decision.

ROBLEY D. BATES, M. D.,
President, Medical Society of Virginia.

Dr. Bates was born in King and Queen County, Virginia, of a distinguished and widely known family. His father and two of his uncles were doctors, and it would seem, then, that tradition demanded his studying medicine. He obtained his elementary instruction from a private tutor and his academic education at Aberdeen, King and Queen County, Virginia. In 1902 he began the study of his profession at the Medical College of Virginia from which he graduated in 1906. There, his ability as a student and leader was fully recognized; in his junior and senior years, he served as an instructor in anatomy, and in his last year was elected president of the student body.

Upon graduation, the possibility of greater financial recompense in urban practice did not lure him from his "native heath," for he returned to King and Queen County and there became engaged in rural practice, doing general medicine and obstetrics. Here, by his perseverance, skill, and diligence, he soon made for himself an enviable reputation and endeared himself to all with whom he came in contact. It is characteristic of Dr. Bates that, although in subsequent years he was afforded many opportunities to leave rural practice for more remunerative work, he never left the place of his birth.

Dr. Bates is a devotee of the idea of postgraduate work for the practicing physician and is of the opinion that it is probably the most important problem of organized medicine at this time. A firm believer in organized medicine, he is an active member of a number of societies. He has been affiliated with the Medical Society of Virginia and the American Medical Association since 1907, and with the Southern Medical Association for many years. He was active in the founding of the Mid-Tidewater Society and has been a member of that group since its conception, serving at one time as its president.

Dr. Bates has filled during his career many positions of importance. He has represented his District in the Council of the Medical Society of Virginia for a number of years, was a member of the Medical Advisory Board during the World War, and is now a member of the State Board of Medical Examiners. He has also been active in local affairs and is the present president of the Bank of Essex.

It is, then, with some pride that the Society points to Dr. Bates as its president. He is a man who has fulfilled the ideals of his profession, never shirking a duty, and practicing his profession with the aim of doing the greatest possible good. The Medical Society of Virginia has made an excellent choice. T. D. J.

**Specialists in Pathology and Clinical Pathology.**

The technician in the laboratory of the medical offices, in hospital laboratories, even in semi-professional institutions or offices, has become very popular. Under the pressure of modern

progress, the so-called technician in pathology and clinical diagnosis has become a sort of fixture in medical practice. Doubtless this arrangement has been an aid to modern medicine, but it has also naturally brought certain untoward effects that need correction. It is probably in answer to this demand that the American Medical Association, for seven years, has been studying the question of the qualifications of the pathologist for approved laboratories. Lists of approved laboratories have been published and members of the Society and readers of the journal have been urged to patronize laboratories under the direction of the acceptable directorship. A list of pathologists and clinical pathologists has been prepared. The education, training and experience of these pathologists and clinical pathologists has been investigated and the names have been listed by such investigation. In this way both laboratories and directors have been listed as measuring up to the requirements. It may be appropriate for readers of this journal to familiarize themselves with these requirements of the American Medical Association.

The essentials* for testing of physicians specializing in pathology and clinical pathology follow:

"*Definition.*—A physician holding himself out as a specialist in pathology may be defined as follows: One who is a graduate in medicine having had satisfactory training and experience in pathology, chemistry, bacteriology or other allied subjects for at least three years subsequent to graduation, who is in good standing and has been duly licensed to practice medicine.

"*Qualifications.*—(*a*) The pathologist shall be on a full or part time basis with a laboratory for the practical application of one or more of the fundamental sciences by the use of specialized apparatus, equipment and methods, for the purpose of ascertaining the presence, nature, source and progress of disease in the human body. He should devote the major part of his time to work in this field.

"(*b*) Pathology should be practiced on the same scientific and ethical basis, whether in the hospital or in a detached laboratory. The work represents the practice of medicine as in other specialties.

"The pathologist may make diagnoses only when he is a licensed graduate of medicine, has had satisfactory training and experience in pathology for at least three years subsequent to graduation from medical college, is reasonably familiar with the manifestations of disease, and is competent to make reliable reports.

"(*c*) Assistant: The pathologist may have a corps of qualified assistants and technicians, responsible to him, and for whom he is responsible, to carry out promptly, intelligently and accurately the several kinds of service the laboratory offers. All their reports, not only of tissues but also of all bacteriologic, hematologic, biochemical, serologic and pathologic data, should be made to the pathologist.

"*Scope.*—A general pathologic laboratory should be prepared to render the following services:

"(*a*) Hematologic: Blood counts, blood groupings and coagulation tests, and tests for blood parasites in general.

"(*b*) Biochemical: Qualitative and quantitative analyses of urine, blood, gastric contents, body fluids, feces, intestinal contents and cerebrospinal fluids; renal and hepatic function tests and basal metabolism.

"(*c*) Bacteriologic: Bacteriologic diagnoses; preparation of vaccines and blood and body fluid cultures.

"(*d*) Serologic: Serologic diagnoses; agglutination, complement fixation, or precipitin and lysis tests.

"(*e*) Pathologic: Preparation of paraffin, celloidin or frozen sections, microscopic and gross pathologic specimens and necropsies.

"(*f*) Parasitologic: Protozoal and zoological diagnoses.

"(*g*) Metabolic: Disorders of metabolism.

"(*h*) Cardiologic: Disorders of the heart.

"It is of course not expected that the candidate shall be prepared to render all the services mentioned, since the work must necessarily be diversified in larger laboratories and in smaller laboratories it is not always practical to have equipment and setups that would be used only occasionally. Since many pathologists limit their work to one branch of the specialty, referring certain items, far more efficiency is to be expected.

"*Reports.*—Reports should be made solely to the physician in charge of the patient and should be signed by the pathologist. All blanks and reports should have the name of the director printed on them and, if of a diagnostic or prognostic character, the name of the staff physician also.

*J. A. M. A., October 14, 1933, pg. 1233-34.

"*Records.*—Full records of all examinations made by the pathologist, suitably indexed and filed, are essential. Every specimen analyzed in the laboratory should be given a serial number, which should follow that specimen in the records and reports. When the laboratory report concerns a hospital patient, an exact transcript of the laboratory record should be appended to the hospital case record. Each specimen submitted to the laboratory should be accompanied by pertinent clinical data.

"*Library.*—The laboratory should be provided with, or have convenient access to, a library including current scientific books and journals on all the various subjects required in its work.

"*Fees.*—There should be no dividing of fees or rebating between the laboratory or its pathologist and any physician, corporate body or group.

"*Publicity.*—Publicity should be in professional good taste and be limited to statements of fact, as the name, address and telephone number of the laboratory; names and titles of the pathologist and other active responsible personnel; fields of work covered; office hours: directions for sending specimens, and the like, and should not contain misleading statements or claims of unusual superiority. It should not advocate medical fads nor lay undue stress on the importance of laboratory observations.

"Only the names of those rendering regular service to the laboratory should appear on letterheads, or any other form of publicity, as being connected with the laboratory.

"Advertising matter should be directed only to physicians either through bulletins or through recognized technical journals, and never to the nonprofessional public, as, for example, by announcements in popular journals and periodicals, circulars, pamphlets, telephone lists or other means." A. G. B.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Speakers For Pediatric Programs.**

Last year the Department of Clinical Education issued an eight-page leaflet listing the names of sixty-two physicians who agreed to serve as speakers for scientific programs of local medical societies. The Department of Clinical Education has now endorsed the proposal of the Pediatric Society of Virginia that special emphasis should be put upon pediatrics clinics. Members of the Pediatric Society who have volunteered to serve when requested on the programs of local societies constitute a supplementary list to be added to the earlier leaflet on "Speakers for Educational Meetings." Besides emphasizing pediatrics in regular society programs, the Department of Clinical Education plans to attempt, if resources can be secured, an experimental program of post-graduate pediatric classes similar to those which have been conducted in the field of obstetrics.

The cooperating members of the Pediatric Society, with the topic preferences expressed by some of them, follow:

Dr. Charles E. Conrad ----------Harrisonburg
Dr. Russell M. Cox ----------Portsmouth
Dr. Littleton Davis ----------Roanoke
Dr. Roger H. DuBose ----------Roanoke
Dr. Emily Gardner ----------Richmond
"Allergic Manifestations in Children."
Dr. Thomas D. Jones ----------Richmond
Dr. W. Ambrose McGee ---------- -------Richmond
"Importance of Body Build in Determining Ideal Weight."
"Comparative Value of the Schilling Differential Blood Count. Sedimentation Rate and Lymphocyte-Monocyte Ratio in Tuberculosis of Childhood."
Dr. William B. McIlwaine ----------Petersburg
Dr. P. W. Miles ----------Danville
A subject of practical value to be selected by the society.
Dr. Samuel Newman ----------Danville
"The Minimum of Laboratory Procedure in Modern Pediatrics."
"Lumbar and Practical Spinal Fluid Examination."
"Tuberculosis in Infancy and Childhood."
"Intravenous Therapy in Infants and Children—with Special Consideration of Blood Transfusion."
Dr. B. M. Rosebro ----------Richmond
"Pneumonia in Children."
"Infant Feeding."
Dr. L. T. Royster ----------University
Dr. Claiborne Willcox ----------Norfolk
"Diabetes in Young Children."
"Cerebral Hemorrhage."
"Infant Feeding."
Dr. Dandridge P. West ----------Norfolk
Dr. F. D. Wilson ----------Norfolk

GEO. W. EUTSLER, *Executive Secretary,*
*Department of Clinical Education.*

**The Seventh Circuit of Post-Graduate Classes in Prenatal and Postnatal Care.**

The classes established in the seventh circuit of courses conducted by Dr. M. E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, are located in Martinsville, Danville (two classes, one a special class for Negroes), Chatham and South Boston. The enrollment through the first four meetings of each class has reached a total of fifty-four. In addition, twenty-three visitors attended one or more meetings of the groups. Judging from early reports, the classes in these centers, which will finish the work of the Joint Committee through the entire southern part of the state, are accomplishing the usual successful results set as a standard by the thirty-three classes which Dr. Lapham has completed during his year and a half of service.

Newly reported members and visitors to the classes are as follows:

Martinsville. Additional enrollments: Drs. D. O. Baldwin, G. P. Dillard, L. C. Haley, J. B. Ray, J. E. Richardson, J. T. Shelburne, E. N. Shockley, J. W. Simmons, C. W. Thomas and L. P. Williams. Visitors: Drs. D. L. Fleshman, R. E. Lee, William Wilson. Total enrollment—17.

Chatham. Enrollments: Drs. J. C. Anderson, Jr., C. C. Grove, Sam Reynolds and W. H. Walcott. Visitors: Drs. A. M. Owen, O. L. Ramsey, W. J. Wigington, Ray Moore and W. A. Brumfield.

Danville. Additional enrollments: Drs. R. W. Garnett, H. A. Wiseman and C. R. Wharton. Visitors: Drs. W. S. Robertson and J. McG. Robinson. Total enrollment—17.

Danville (Colored). Enrollments: Drs. J. L. Harris, L. D. Keene, C. A. Luck, J. A. Luck and A. L. Winslow. Visitor: Dr. J. L. Cornitcher.

South Boston. Additional enrollments: Drs. J. D. Hagood, John A. Owen, L. H. Hoover and C. B. White. Visitors: Drs. A. P. Bohannon and Eastlake. Total enrollment —11.

**Final Report on Sixth Circuit.**

The six classes completed by Dr. Lapham during September in Tazewell, Lebanon, Bristol, Abingdon, Marion and Richlands have elicited from the physicians enrolled comment remarkably in keeping with that of their colleagues who have preceded them in this study. On both signed and unsigned questionnaires thirty-one of the thirty-two physicians replying rated the lectures of the course as either excellent or good. Fifteen of twenty-five replies rated the clinics as excellent or good. Thirty, all who replied to the question, testified that the course was worth the cost in time and money, and twenty-six indicated their desire for similar instruction in other branches while two did not favor further courses. Pediatrics, with ten first choices, again led the list of subjects preferred, followed by general medicine with seven.

The tabulated report of enrollments, visitors and attendance for the meetings of these six classes is as follows:

| | Enrolled | | Visitors | | Attendance | |
|---|---|---|---|---|---|---|
| | No. | Present | No. | Present | Average | Per Cent |
| Tazewell | 10 | 73 | 9 | 11 | 8.4 | 73.0 |
| Lebanon | 9 | 53 | 2 | 8 | 6.1 | 58.8 |
| Bristol | 15 | 110 | 23 | 69 | 17.9 | 73.3 |
| Abingdon | 11 | 75 | 8 | 23 | 9.8 | 68.1 |
| Marion | 12 | 91 | 5 | 17 | 10.8 | 75.8 |
| Richlands | 6 | 51 | 1 | 3 | 5.4 | 76.6 |
| | 63 | 453 | 48 | 131 | 58.4 | 71.6 |

**Future Circuits of Post-Graduate Courses.**

The Medical Association of the Valley of Virginia at its meeting in Winchester on September 28th endorsed the organization of Dr. Lapham's classes in the northern part of the Valley, beginning probably in March. It is anticipated that this ninth circuit will establish centers of instruction in Rockingham, Shenandoah and Frederick Counties with one or two extra centers in neighboring counties as the convenience of the physicians may dictate.

For the eighth circuit starting in January, the Joint Committee has tentatively assigned Dr. Lapham to the Peninsula from Richmond and vicinity to Hampton. The Executive Committee of the Richmond Academy of Medicine has already approved the organization of a class for the Negro physicians of Richmond.

At its meeting on October 5th in Clifton Forge the possibility was presented to the Alleghany-Bath County Society of arranging one or two groups of physicians, perhaps in Clifton Forge and Covington or alternating between the two cities for either two weeks or a month of intensive work.

**Component Societies Vote Approval of the Joint Committee's Program.**

The Joint Committee on Prenatal and Postnatal Instruction was required, when the Medical Society of Virginia established it, to organ-

ize its classes in a community only after they had been approved by the local society. In conformity with its requirement, information has been given by members and agents of the Joint Committee to about fifty local medical societies and special groups of physicians. Thirty-two of the societies have voted their approval of the program, unanimously in every case so far reported except one. Eleven of the smaller county societies adjacent to the centers of instruction have been represented in the membership of the classes. Eliminating these, which have taken no group action on the program, of the forty-nine component societies listed in the directory of the Medical Society of Virginia, the thirty-two which have approved this work constitute almost exactly two-thirds of the organized units in the state. In addition, thirteen especially called groups of physicians in counties without a local organization have endorsed the program. Alone among the societies which have been asked to consider and vote upon this method of post-graduate medical education, the Mecklenburg County Society, at its meeting on September 26th, by a vote of seven to six withheld its approval.

Geo. W. Eutsler, *Secretary,*
*Joint Committee.*

# Proceedings of Societies

**The Roanoke Academy of Medicine**

Held its first meeting for 1933-34 on Monday evening, October 2nd, in the Ballroom of the Elks Club. This was a dinner meeting and the officers for the coming year were elected as follows: Dr. E. C. Ambler, President, Dr. George Hurt, first Vice-President, Dr. Paul Davis, second Vice-President, Dr. Mortimer H. Williams, Secretary-Treasurer.

The following were elected as members of the Executive Committee: Drs. C. E. Conduff, L. G. Richards, W. P. Jackson, W. W. S. Butler, Jr., and Fred Hamlin.

The following were elected as members of the Judiciary Committee: Drs. S. B. Cary, A. P. Jones, J. M. Bishop, C. A. Young and Roger DuBose.

Dr. W. W. S. Butler, Jr., read a paper on "Roentgen Ray Aids in the Management of Cases With Prostatic Enlargement."

**The Mid-Tidewater Medical Society**

Held its regular quarterly meeting at Millers Tavern, Va., in October, Dr. J. Blair Spencer, Gloucester, presiding. Papers were presented by Drs. Howard R. Masters, A. I. Dodson and D. S. Daniel, all of Richmond.

At the business session, Dr. R. R. Hoskins, Mathews, was installed as president for the coming year, and the following officers were named: President-elect, Dr. E. L. W. Ferry, Millers Tavern; vice-presidents (one from each county), Dr. E. T. Sandberg, Mathews; Dr. Jams W. Smith, Gloucester; Dr. W. E. Croxton, West Point; Dr. J. M. Gouldin, Tappahannock; Dr. M. H. Eames, Quinton; Dr. L. O. Powell, Seaford; Dr. E. C. Cobb, Ruthers Glen; Dr. H. F. Hoskins, Saluda; secretary, Dr. M. H. Harris, West Point; treasurer, Dr. James D. Clements, Ordinary. Both of the last named were re-elected. It was decided to hold the January 1934 meeting at West Point, Va.

**Post-Graduate Medical Society of Southern Virginia.**

There was a clinical meeting of the physicians of the fourth councilor district in conjunction with the regular meeting of this Society in Petersburg, on October 17th, under the presidency of Dr. W. W. Seward, of Surry. The doctors in each county included in this district elected delegates to the State Society meeting at this time. Dr. W. M. Bowman, Petersburg, read a paper on Modern Methods of Birth Control and there was a symposium on Heart Diseases by Dr. J. E. Wood, Jr., University, and Drs. D. G. Chapman and J. M. Bailey, of Richmond. Dr. Frank Johns, of Richmond, also read a paper on Extra-Uterine Pregnancy. All were freely discussed. Approximately one hundred physicians registered attendance.

Dr. W. D. Prince, Stony Creek, was elected president for the coming year; Drs. E. L. Kendig, Victoria, and J. A. B. Lowry, Crewe, vice-presidents; Dr. Herbert C. Jones, Petersburg, secretary-treasurer; and Dr. Wright Clarkson,

Petersburg, chairman of the Steering Committee. The Board of Censors includes Dr. T. F. Jarratt, Jarratt; C. S. Dodd, Petersburg, and W. D. Prince, Stony Creek; and the Public Health and Legislation Committee is composed of Drs. J. Bolling Jones, Petersburg; W. M. Phipps, Hopewell, and D. C. Mayes, Church Road.

**The Southwestern Virginia Medical Society**

Held its regular semi-annual meeting in Wytheville, September 15th, under the presidency of Dr. J. A. Noblin, of East Radford. Dr. Harry Bachman, Bristol, is secretary. The meeting opened with a luncheon at the George Wythe Hotel, following which papers were read by Drs. W. W. S. Butler and C. H. Peterson, Roanoke; Dr. James King, Radford; Dr. L. E. Starr, Blacksburg; Dr. Alfred P. Jones, Roanoke; Dr. E. G. Gill, Roanoke; and Dr. A. M. Showalter, Christiansburg. After a banquet in the evening, the President gave his address, and papers were presented by the invited guest, Dr. J. B. McElroy, Memphis, Tenn., and Dr. James H. Smith, Richmond.

The next meeting will be held in the Spring of 1934.

**Alleghany-Bath County Medical Society.**

At a meeting held in Clifton Forge, October 5th, Drs. Greer Baughman, Dean B. Cole, and R. Finley Gayle, Jr., all of Richmond, were guest speakers.

**The South Piedmont Medical Society.**

At the April meeting of this Society, the following officers were elected: President, Dr. F. O. Plunkett, Lynchburg; vice-presidents, Drs. G. T. Harris, Madison Heights; H. W. Pritchett, Danville; W. C. Brann, South Boston; W. R. Martin, Charlotte C. H.; T. G. Hardy, Farmville; and Ray A. Moore, Farmville; and secretary-treasurer, Dr. George A. Stover (re-elected), South Boston.

The Fall meeting will be held in Danville, November 28th, at which time a symposium on "Diseases of the Liver and Gall-Bladder" will be presented.

**The Clinch Valley Medical Society**

Held its regular meeting in Tazewell, September 30th. About fifty members were in attendance. Interesting papers were read by Dr. L. C. Harshbarger, Norton; Dr. Littleton Davis, Roanoke; Dr. Roger H. DuBose, Roanoke; and Dr. Wade H. St. Clair, Bluefield, W. Va.

The following officers were elected for the ensuing year: President, Dr. J. M. Dougherty, Nickelsville; vice-presidents, Drs. J. H. Hagy, Imboden, and S. O. Massey, Amonate; and secretary-treasurer, Dr. C. B. Bowyer (re-elected), Stonega.

Norton was selected as the next place of meeting which is to be in April.

# News Notes

**Medical Society of Virginia.**

As we go to press, the sixty-fourth annual meeting of the Society is being held in Lynchburg, under the presidency of Dr. J. Carroll Flippin, of the University of Virginia. Dr. R. D. Bates, Newtown, succeeds to the presidency at this time.

A full report of the meeting will appear in the December issue of the MONTHLY. By telegraphic communication, however, we announce that Dr. Francis H. Smith, Abingdon, Va., has been named president-elect.

**Welcome to Richmond for the Southern Medical Association Meeting!**

With every prospect of a banner meeting, the Southern Medical Association moves on to Richmond for its next annual convention, beginning on the 14th and extending through the 17th of November.

Probably at no time in the history of the nation has solidarity of effort and thorough accord of spirit been more necessary than at this moment when the clouds of the devastating depression seem to be breaking. The physicians of the South, always alert to opportunities and obligations, can "do our part" just now in no more effective way than by bringing to one another the stimulus that flows from the companionship, from the broadening of ideas, from the actual dissemination of new thought that always mark the sessions of this great organization.

It seems fitting that this girding of the medical forces of the South for the New Day that

is dawning should occur in the capital of the Old Dominion, the focal point of so many stirring events in the history of the United States. Today a metropolitan area of wide dimensions and a medical center of real note, Richmond, of a yesterday that reaches back to the dawn of English occupancy of this continent, is filled with memorials of great names and greater deeds that, along with its natural beauties, lend it a lure, a charm equaled by few other American cities. To these physical and historic embellishments it adds a warmth of hospitality that assures a genuine and winning welcome to our Association.

In behalf of the profession in this city as expressed by your host, the Richmond Academy of Medicine, we extend to the physicians of the South cordial greetings and expression of our earnest desire to have you with us during these notable sessions. General and sectional programs have been admirably arranged and the clinics and scientific exhibits will offer demonstrations of lively interest. Local committees will spare no effort to contribute to the comfort and convenience of the delegates and such guests as may accompany them. The social diversions offered by the city will be very engaging and the points of interest here and in the surrounding territory will lead you into many delightful byways. Let us hope, then, to see you among this great host. It will be our pleasure to solve your problems of transportation, of hotel reservations, or of anything else that may be bothering you. If you have established no other contacts, the undersigned will be very gratified indeed to receive your communication and direct it into the proper channel for immediate action.

Joseph F. Geisinger, M. D.,
*Chairman, Publicity Committee,*
*Stuart Circle Hospital, Richmond, Va.*

**The Women Physicians of the Southern Medical Association**

Will hold their nineteenth annual meeting at the Gypsy Tavern, Boulevard and Grace Street, Richmond, Wednesday, November 15th, at 6 P. M.

The business meeting will be followed by a dinner, with the Chairman, Dr. Ray K. Daily, Houston, Texas, presiding. Program features are being arranged.

Women physicians attending the Richmond meeting are invited on the all day trip to historic Williamsburg, on Thursday, the entertainment provided the visiting ladies. Additional informal entertainment is being planned.

Dr. Pauline Williams, Medical College of Virginia, Richmond, is local Chairman for Women Physicians.

**Married.**

Dr. Clifton Ross Titus and Miss Mildred Carolyn Mitchell, both of Bassett, Va., October 7th.

Dr. Walter Lewis Nalls, of Alexandria and Richmond, and a member of the class of '32, Medical College of Virginia, and Miss Aileen Lee Williams, Richmond, October 14th.

Dr. Paul Lawrence Dent, class of '31, Medical College of Virginia, and Miss Willada Hall Rickman, Roseland, Va., recently. They are making their home in Quinwood, W. Va.

Dr. Sigman Van Lewis, Middlesex, N. C., and Miss Ola Elizabeth Caudle, Randleman, N. C., August 5th. Dr. Lewis is an alumnus of the Medical College of Virginia.

**The New York Polyclinic Medical School and Hospital**

Gave a very elaborate special program September 27th, in honor of visiting Brazilian physicians. An excellent surgical program was put on from 9:00 A. M. to 12:15 P. M. After this there was an inspection of the Hospital, followed by luncheon in the Chinese Lounge. Dr. Jerome Lynch is president of the faculty and Dr. Edward L. Kellogg was chairman for this program.

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The following special lectures will be given at the New York Polyclinic Medical School and Hospital during the session of 1933-1934, by Russell L. Cecil, M. D., Professor of Internal Medicine at the Polyclinic:

October 18, 1933—Encephalitis.
November 15, 1933—Typhoid.
December 13, 1933—Infectious Endocarditis.
January 17, 1934—Influenza and the Common Cold.
February 14, 1934—Lobar Pneumonia.
March 14, 1934—Rheumatic Fever.
April 18, 1934—Arthritis.

All of these lectures will be on Wednesdays, at 2:30 P. M., in the Medical Amphitheatre, on the second floor.

**American College of Surgeons.**

At the meeting of the College in Chicago, in October, Dr. J. Bentley Squier, New York, succeeded Dr. Wm. D. Haggard, Nashville,

Tenn., as president. Dr. Robert B. Greenough, Boston, was chosen as president-elect to take office in 1934, and Drs. Charles A. Dukes, Berkley, Calif., and Roscoe R. Graham, Toronto, Canada, were elected vice-presidents. Dr. Franklin H. Martin, Chicago, is director general.

**Virginian Honored.**

Although unable to attend the meeting, Dr. M. Pierce Rucker, Richmond, Va., was named President-elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at its recent annual meeting at Lucerne-in-Quebec, Canada. This is considered an especial honor, in view of the fact that this organization is composed of a selective group of physicians from the United States and Canada.

Dr. W. Wayne Babcock, Philadelphia, was installed as president, and Dr. Magnus A. Tate, Cincinnati, was re-elected secretary. The next annual meeting will be held in September, 1934.

**The Roll Call of the American Red Cross.**

The American Red Cross announces its annual Roll Call, from Armistice Day to Thanksgiving, secure in the confidence that today, as never before, the American people know the full meaning of Red Cross Service.

When you join the American Red Cross you become a member of your local chapter and also of the national organization. The Red Cross is *your* Red Cross. Every deed of mercy, every humanitarian act performed in its name reflects your individual participation in its nation-wide relief projects.

**Dr. A. S. Richardson,**

Recently of O'Keeffe, W. Va., has located at Grundy, Va., where he has built a thirty-bed hospital, known as the Grace Richardson Hospital.

**News Notes from Medical College of Virginia.**

Dr. Lee E. Sutton, Jr., dean of the school of medicine, will represent the college at the annual meeting of the Association of American Medical Colleges to be held in Rochester and Minneapolis, October 30th-November 1st.

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September report for the Outpatient Department shows 5,676 patient visits, a gain of approximately five hundred over the same month last year. An average of two hundred twenty-seven patients a day with a maximum day of two hundred sixty-eight patients was the record for the month.

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Miss Aileen Brown, Director of Dietetics, Hospital Division, attended the annual meeting of the American Dietetic Association in Chicago, October 9th-14th.

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The portrait of Dr. John Cullen, first professor of medicine, was presented to the college on October 14th. Various members of the Cullen family were present for the unveiling. The cape clasps of Dr. Cullen were also presented to the college for its museum. The collection of articles once belonging to the founders is growing in a very satisfactory way, as well as other articles for the medical museum, which once belonged to men prominent in the field of medicine in Virginia.

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**News Notes from the Duke University School of Medicine and School of Nursing.**

On October 2, 1933, the autumn quarter of the School of Medicine commenced, with sixty-one students enrolled in the first year class, forty-three in the second year, forty-nine in the junior and seventeen in the senior class, making a total of one hundred and seventy students in the school.

On the same date the School of Nursing began their autumn quarter with eighty-six students, twenty-eight of whom were starting first year work.

**Dr. Charles William Scott,**

Prominent as a tuberculosis specialist and clinician for the State Department of Health for the past nine years, has retired to take up private practice in Newport News. He will specialize in diseases of the chest.

**American Public Health Association.**

At its annual meeting held in Indianapolis, in October, Dr. Haven Emerson, of New York City, succeeded to the presidency, Dr. E. L. Bishop, Nashville, Tenn., was selected as president-elect, and Dr. Kendall Emerson, New York, was re-elected secretary. Pasadena, Calif., was chosen as the place for the next annual meeting.

**Dr. Randolph L. Anderson,**

After practicing for some years in Richmond, Va., where he was also connected with the teaching staff of the Medical College of Virginia, has located in Charleston, W. Va. He has offices at 202 Professional Building and is limiting his work to orthopedic surgery and fractures.

**New Library Books Available to Members.**

In addition to the books previously listed, the following newer books in the Library of the Medical College of Virginia may be borrowed by members of the Medical Society of Virgina at any time, the only cost being return postage:

*Ballenger, E. G.*, et als. History of Urology.
*Barker, L. F.* Young Man and Medicine.
*van Bencden, J.* Recherches sur l'infection l'hypersensibilite et l'immunite . . . du virus tuberculeux.
*Benhamou, Ed.* L'exploration fonctionelle de la rate.
*Beutner, R.* The Physical Chemistry of Living Tissues and Life Processes.
*Bond, E. D.*, and *Appel, K. E.* The Treatment of Behavior Disorders Following Encephalitis. 1931.
*Bunting, R. W.* A Textbook of Oral Pathology. 1929.
*Butler, Pierce.* Introduction to Library Science.
*Castiglioni, A.* Italian Medicine. Tr. by Krumbhaar. 1932.
*Chase, S.* A New Deal. 1933.
*Cecil, R. L.*, and *Foster, K.* A Textbook of Medicine. Last ed.
*Clark, A. J.* The Mode of Action of Drugs on Cells.
*Clendening, L.* The Human Body.
*Collins, Jos.* The Doctor Looks at Love and Life.
*Criteria Comm.* of the Heart Comm. of the N. Y. Tuberculosis and Health Assoc. Criteria for the Classification and Diagnosis of Heart Disease. 3 ed. 1932.
*Cushing, Harvey.* Papers Relating to the Pituitary Body. 1932.
*Despard, L. L.* Textbook of Massage and Remedial Gymnastics. 3rd ed. 1932.
*Fulton, J. F.*, and *Keller, A. D.* A Study of the Evolution of Cortical Dominance in Primates. 1932.
*Gerould, J. T.* The College Library Building; Its Planning and Equipment. 1932.
*Glasser, Otto*, ed. The Science of Radiology.
*Goldstein, Max.* Problems of the Deaf. 1933.
*Harington, C. R.* The Thyroid Gland; its Chemistry and Physiology. 1933.
*Hodgson, V. H.* Public Health Nursing and Industry.
*Howell, W. B. Medicine in Canada.* (Clio Medica.) 1933.
*Huxley, J. S.* Problems of Relative Growth.
*Jacobson, H. P.* Fungous Diseases.
*Jeans, J.* The New Background of Science.
*Kellogg, E. L.* The Duodenum; Its Structure and Function. 1933.
*Krueger.* Elementary Materia Medica.
*Laurens, H.* Physiological Effects of Radiant Energy.
*Lewis, B.*, ed et als. History of Urology. 2v. 1933.
*van Loon, Hendrik, Willem.* The Story of Mankind.
*Lorand, S.*, ed. Psycho analysis Today; Its Scope and Function. 1933.
*Lusk, Graham.* Nutrition. 1933.
*Lydenberg, H. M.*, and *Archer, J.* Care and Repair of Books.
*Macleod.* Physiology and Biochemistry in Modern Medicine. 6th ed. 1930.
*Merrill, Frances* and *Mason.* Among the Nudists.
*Mitchell, B.* A Preface to Economics.
*Moore, B. V.*, and *Hartmann, G. W.* ed. Readings in Industrial Psychology. 1931.
*Morse, M. G.* The Medical Secretary. 1933.
*Muse.* Psychology for Nurses. 2nd ed.
*Olson.* Improvised Equipment. 2nd ed.
Organic Syntheses. Vols. 10, 11, 12 and 13.
*Parsons, L. G.*, and *Seymour, B.* Diseases of Infancy and Childhood. 2v. 1933.
*Parsons, J. H.* Diseases of the Eye. 1930.
*Pasteur, L.* Oeuvres de Pasteur. Ed. by P. Vallery-Radot. v. 6.
*Pepper, P.* and *Farley, D. L.* Practical Hematological Diagnosis. 1933.
The Publishers Trade List Annual. 1933.
*Robbins, W. W.* Plants Useful to Man.
*Sister Alma.* Clinical Laboratory Manual.
*Sobotta, J.* and *McMurrich.* Atlas of Human Anatomy. 3v. Latest ed.
*Smithies, E. M.* Case Studies of Normal Adolescent Girls. 1933.
*Sydenstricker, E.* Health and Environment.
*Wells, B. W.* The Natural Gardens of North Carolina. 1932.

**Hospital to Discontinue Nursing School.**

The Mary Washington Hospital, Fredericksburg, Va., has discontinued its nursing school and transferred sixteen students to the University Hospital, Charlottesville. The change was made by the board of managers because the institution, could not give adequate training to the students since the standard of nursing education has been raised. The hospital is now operating for the first time since 1906 entirely with graduate nurses.

**Dr. Charles L. Savage,**

Who has been conected with the medical staff of Blue Ridge Sanatorium, since the summer of 1930, has resigned this connection to become clinician for the State Tuberculosis Out-Patient Department, succeeding Dr. Charles W. Scott who has just located in Newport News, Va.

**Conference of Secretaries.**

The annual Conference of Secretaries and Editors of Constituent State Medical Associations of the American Medical Association was held in Chicago, September 22nd and 23rd, with members of the Conference as guests of the American Medical Association. Dr. Walter F. Donaldson, Pittsburgh, secretary of the Medical Society of the State of Pennsylvania, was selected as chairman, and presided at all sessions. The papers presented were on most timely subjects and were practical and helpful.

**Dr. A. Micklem,**

Recently at Alberene, Va., announces that his address is now Rockfish, Va.

**Dr. Claude A. Nunnally**

Has opened offices in Fredericksburg, Va., for the practice of internal medicine. He is a graduate of the Medical College of Virginia, in 1929, and served his internship in the Hospital Division of the College. He was in the medical service of the New England Medical Center for one year, after which he returned to the Medical College of Virginia where he has been for the past two years.

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**Wanted—**

Year round resident physician. Maintenance and reasonable remuneration. References and personal data requested. Memorial Hospital, Danville, Va. (*Adv.*)

# Obituary Record

**Dr. John Staige Davis,**

Well-known physician of University, Va., and President of the Medical Society of Virginia in 1923, died September 21st, following a long illness. He was sixty-seven years of age and received his degree in medicine from the University of Virginia in 1889. Dr. Davis studied medicine in Berlin and Vienna and engaged in practice for a year in New Orleans. He had for forty years been a member of the medical faculty of the University of Virginia, being forced to retire six years ago following a stroke of paralysis. Dr. Davis had been an active member of the Medical Society of Virginia since 1894. His wife, a son, Dr. John Staige Davis, Jr., and two daughters survive him.

**Dr. Joel Crawford,**

Prominent physician of Yale, Va., died October 14th, in the Petersburg Hospital, following a short illness. He was seventy-three years of age and graduated from the University of Pennsylvania, School of Medicine, in 1883. Dr. Crawford had practiced for the past half a century in Yale and Sussex County and was one of the best known and most beloved men of the county. He had always taken an active interest in the affairs of the Medical Society of Virginia, having been a member for forty-five years. Three brothers and a sister survive him.

**Dr. Henry Armistead Bullock,**

Widely known Richmond, Va., physician, died October 2nd, following a long period of ill health. He was born in Bullock, N. C., in 1891, and graduated from the former University College of Medicine, Richmond, in 1912. Dr. Bullock was prominent in Masonic circles, a member of the Scottish Rite and the Acca Temple Shrine. He had been a member of the Medical Society of Virginia for a number of years. His wife and two sons survive him.

**Dr. Alpheus Hartley Wood,**

Emporia, Va., died September 28th, after a long period of invalidism. He was 35 years of age and graduated from the Medical College of Virginia in 1927. Dr. Wood was a member of the Medical Society of Virginia. His wife and one child survive him.

**Dr. Herman E. Jones,**

Roanoke, Va., where he had made his home since 1888, died August 17th, after a short illness. He was seventy-three years of age and graduated from the University of Virginia, Department of Medicine, in 1886. His wife survives him.

**Dr. Powell C. Fauntleroy,**

Colonel, U. S. Army, retired, Washington, D. C., died July 30th. He was sixty-three years of age and a graduate of the University of Virginia, Department of Medicine, in 1893.

**Dr. Thomas Friend Willson**

Died September 22nd, at his home in Arcola, Miss. He was a native of Powhatan County, Va., and graduated from the former University College of Medicine, Richmond, in 1899.

**Dr. Fletcher Reese Harris,**

Henderson, N. C., died August 27th. He was 73 years of age and graduated from the University of Virginia, Department of Medicine, in 1881.

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Southern Medical Association — IN the South, OF the South, FOR the South

NOV. 14-17

HOUDON'S STATUE OF WASHINGTON

27th ANNUAL MEETING SMA

RICHMOND

*Historic City of the Old South*

THE MEDICAL MEETING OF THE YEAR IN THE SOUTH — The Southern Medical Association at Richmond. Every phase of modern scientific and modern practical medicine and surgery will be covered in the general and clinical sessions, the sixteen sections and the four conjoint meetings: American Society of Tropical Medicine; National Malaria Committee; Southern Branch, American Public Health Association; and Southern Section, Society for Experimental Biology and Medicine. A complete and well-rounded program and program arrangement — a meeting where modern scientific and modern practical medicine and surgery will be brought down to NOW. And just enough entertainment, social and recreational activities, to make a medical meeting complete. ¶ At the Southern Medical Association meeting there is an atmosphere known to no other medical meeting—the atmosphere of the new South tempered with the cordiality and charm of the old South. ¶ Richmond, Virginia, "Historic City of the Old South," Tuesday, Wednesday, Thursday and Friday, November 14-17. And after Richmond, Washington—a post-meeting day in the Nation's Capital, Saturday, November 18.

EVERY PHYSICIAN IN THE SOUTH who is a member of his state and county medical societies can be and should be a member of the Southern Medical Association. The annual dues of $4.00 include the Association's own Journal each month, the Southern Medical Journal—the equal of any, better than many.

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Rectal fistula
Diabetic gangrene
After removal of tonsils
After tooth extraction
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## MEDICAL EDUCATION AND MEDICAL PRACTICE.*

J. CARROLL FLIPPIN, M. D., University, Va.
President, Medical Society of Virginia.

Two years ago when acknowledging the honor the Society had done me by selecting me as its President, I took occasion to say that I realized the office came to me in recognition of the position I happened to occupy in medical education in Virginia. It seems fitting, therefore, in selecting a subject for the customary annual address that I speak on some phase of medical education.

Now, when the Dean of a Medical School gets loose in a broken field discussing the curriculum or other problems, he is usually hard to block and you are in for a long run. Tonight, however, I am strongly impressed with a sense of courtesy and obligation to our distinguished guests who are to follow me and I shall endeavor to use a proper restraint in rattling the dry bones of pedagogy, even though my commentaries may be sketchy and inconclusive, which of necessity they must be.

In that remarkable and time honored human document, the so-called Oath, Hippocrates laid it down as one of the sacred duties of the physician to hand down his knowledge to the oncoming generation. In the changes of passing years the preceptor system, as Hippocrates knew it, has largely passed away and incidentally, with it we have lost many things that were valuable and hard to replace. It remains true, however, that an obligation still rests upon the man of medicine, the physician, to maintain an informed and lively interest in medical education, to promote its welfare and to guard its interests.

Medical progress and medical education are under heavy obligation to men in the cognate sciences. Their presence on our faculties has been most stimulating and their services invaluable. They have done much to enrich our fund of information and particularly to stimulate the spirit of research. However, I believe experience has shown that medical teaching should not be divorced or too far removed from the influence of those trained and experienced in the art and science of healing.

During the decade ending about three years ago there was greater opportunity for a well prepared young man to quickly establish himself in almost any field of medical practice than ever before, certainly in this generation. In the past three years conditions have radically changed—this change being due in part to existing economic conditions, but it is also apparently a fact that we were already reaching the saturation point in absorbing the annual output of medical graduates.

In the past several months I have had some difficult and depressing hours talking with younger men whom I had previously influenced to follow a program of special training in this country and abroad extending over a period of four to six years. These are serious minded, able, intelligent men, well prepared to do excellent work in their chosen field and in some instances they have already made worthwhile contributions to medical literature. In casting about for a place to locate they find the door apparently closed because the field seems everywhere over crowded. In time such men will, of course, find their places and their rewards—at least such is my abiding faith, but such examples sharply raise the question of supply and demand of physicians in this country. And I may add the pinch is by no means confined to the recent graduate, as well established men in many instances are acutely conscious of this pressure of increasing competition.

In the recently published report on medical education, representing results of exhaustive study by a commission of which President Lowell, of Harvard, was chairman, it is shown that there are some 156,000 practicing physicians in the United States, one physician to every 780 persons. If the United States had the same ratio of physicians to population as

*Presidential address read before the 64th Annual Meeting of the Medical Society of Virginia, Lynchburg, Va., October 24-26, 1933.

England and Wales, we would have 82,500 physicians. If the ratio were that of Germany it would be 79,000. Of France 73,000. If our ratio were that of Sweden we would have only 42,500 physicians instead of our 156,000. It is to be remembered, however, that practically all European countries have some form of State or cooperative medicine, which, it is said, tends to reduce the demand or need for so high a ratio of physicians to population as under conditions prevailing in the United States. Of course, now, the American people demand more automobiles, more radios, movies, chewing gum and beauty shops and they will doubtless continue to demand more doctors than any other people on earth, at least let us hope they will. This commission estimates that there is at present an over supply of at least 25,000 physicians in this country and this over supply is yearly increasing.

The annual output of medical graduates from approved institutions in this country seems likely to be stabilized around 5,000. To this number is added graduates from foreign universities and a certain number from non-approved schools in the United States. There has been also a growing tendency for students refused admission to schools in the United States to go to foreign countries and return here for licensure. All of this means that an already over-crowded field is becoming more congested year by year.

Closely allied to the problem of over supply of physicians is the question of specialism. One of the most outstanding developments of modern medical practice has been the rapid increase of specialism. This has been an obviously necessary and altogether salutary development, as medical science and practice have gained much from the work of men who are devoting their time and efforts to restricted fields. Influenced doubtless by the intellectual satisfaction of greater mastery of a limited field, greater financial returns, the relative attractiveness of office and hospital practice, specialism has increased at a rate which at least challenges attention. Seemingly, certain medical schools have an influence in directing their men to specialism, or else, students who select these schools do so because they are looking forward from the outset to entering some particular field of medicine. In statistics recently compiled by Dean Weiskotten, of Syracuse University, it was found that of all graduates of Johns Hopkins of a given period 75.1 per cent were specializing. Of a similar group of Harvard graduates 64.1 per cent and of the University of Virginia, third from the top of the list, 61.5 per cent. If criticism is to be made of the influence of medical schools on over specialization I am, therefore, in a highly vulnerable position. It was ascertained that of graduates of all schools for the year 1915 after a stated period 40.9 per cent had limited their practice to some specialty. Available evidence seems to indicate clearly that the various branches of specialism have become unduly over-crowded and to an extent out of proportion to the over-crowding in the profession as a whole. Those who limit their practice well nigh all live in cities and this is a fact of appreciable importance in the uneven distribution of physicians.

In time, the levelling influence of supply and demand will naturally have some effect upon these problems, but a more intelligent course would seem to lie in the direction of a cooperative movement by the medical schools and existing agencies of organized medicine. You may know that such movements are already under way, as the question is being considered by the American Medical Association, by various societies representing branches of specialized medicine, and will receive the attention of the Association of American Medical Colleges at its coming meeting. The solution, however, is not perfectly simple.

About twenty-five years ago the profession was over-crowded to a greater extent than it is today. At that time the effective remedies were standardization of the medical schools, resulting in the closing of about one-half of the schools then existing, and the raising of entrance requirements. Medical education today is pretty thoroughly standardized, perhaps over standardized in certain directions, and relief from this source is not to be expected to an appreciable degree. A farther increase in entrance requirements would undoubtedly tend to reduce the number of students entering the medical schools. If, however, the present standard of college preparation is adequate this would be a remedy of doubtful wisdom. The average age of medical graduates is already considerably greater than that of other professions and if we were to add, say, two more years to preparatory work, there may be real danger of encroachment upon the plastic

phase of early life during which new ideas and manual skill are most easily acquired—and, of course, it would shorten what we may call the productive period of a professional man's life. A required course of interneship of the same length would not be subject to all of these criticisms, but would doubtless be less effective in reducing the output of the schools, as a large proportion of graduates now serve two or more years in the hospital before entering practice.

Medical education is already a long an expensive process and it would be unwise and unfortunate to place a career in medicine beyond the financial resources of many deserving young men. I realize only too well the difficulties many physicians are now having in making it possible for their own sons to follow in their footsteps. It is intelligent that this matter have attention and I believe forces are already operative which ultimately will bring relief.

As is so often true, there is another side to the picture. Today in this country many more students are being sent out by the colleges of arts and science with preparation for medicine than can be taken into the medical schools. This enables the schools to give consideration to qualifications other than solely those of scholarship attainments. The admitting officers are making closer studies of candidates seeking admission with a view of evaluating such factors as aptitude, moral and ethical qualifications, personality and cultural background. To weigh these imponderables is, of course, a matter of some difficulty and it can be done only in a general way, but the public and the profession should be safeguarded and surely we should look to the manner of man on whom the mantle is to fall, as training without character makes for a dangerous and undesirable product.

I take no stock in the idea that the medical student of today is scientifically or in any other way over-trained, or that there should be some simplified way of training men who are to go out as general practitioners in small towns and rural communities. Better far that general practice be viewed as one of the more difficult specialties for picked men and for which a student should have thorough training and for which he should also have commensurate reward—intellectual and financial.

I will say but a word about the curriculum, which has unquestionably become over-standardized and is now in the process of being made less crowded and less rigid. The rapid and considerable additions to our knowledge in the field of medicine in recent years have brought some perplexing problems as to what the student should be expected to learn in the four years he is in the Medical School. In order to meet what seem to be basic and elementary demands, the student is expected to acquire an amount of factual information which often taxes his brain and frequently over-taxes his physical strength. Too little time is permitted for intellectual digestion and reflection and brings with it a tendency to suppress the all-important process of reasoning and thinking. Medical faculties are constantly beset with suggestions and sometimes demands from well meaning and interested groups to add this or that course to the medical curriculum. As a matter of fact the medical student can be expected to be technically trained and skilled in but few things. He should have the opportunity of seeing all the more important diagnostic and therapeutic procedures carried out by those who have mastered particular fields, in order that he may know their possibilities and more especially their difficulties and limitations. We cannot expect to prepare a student to go out of the college doors fitted to practice medicine in any of its branches, as an essential part of his training must be had in his interne years. If during the four years he is in the medical school he acquires an adequate foundation for his future education and is inspired to properly continue this educational process in after years, the medical school will have done its duty.

I confess I have never been able to make a perfectly clear distinction in my own mind between what we often refer to as the art of medicine and the science of medicine. However, after courses in chemistry and physics and biology and possibly others of the sciences in the college of arts and science and after his first two years in the medical school, spent almost entirely in the laboratories, the student is apt to accept as facts or as "scientific" in his clinical work only those observations made with a microscope, a test tube or some instrument of precision, or at least he puts them in a highly preferred category. It is difficult for him to appreciate the fact that a life situation may be as important as a Wassermann reaction.

Also in these latter days medical men in increasing numbers have gathered around the various openings of the body, each to his liking, and with tubes and lights peering in, have become more or less fascinated and absorbed with what they see. Others with new instruments of precision and improved methods have concentrated on the heart, the lungs or some other of the organs. This intensive study, while adding enormously to our knowledge and while being of untold value to mankind, has brought with it a tendency to overlook the individual, the total organism reacting to disease or to a situation, and not merely a collection of detachable parts.

While fully admitting that students in time can be set straight by the proper kind of clinical teaching, I believe the emphasis now being given to psychiatry in medical schools is most helpful in broadening the student's mental horizon. Of course, mental disease is one of the great problems of civilization and in the past we have given too little attention to the teaching of psychiatry in our schools, but, if properly presented, like preventive medicine in connection with other clinical courses, it is capable of imparting a much needed leaven to the entire loaf.

I pass rapidly over the interne years, which should be the busiest, the most enriching and in many ways the most important period of a student's training. When the young man leaves the hospital wards and offers for practice we commonly say that he has "settled" somewhere. Too often this word comes to take on one of the dictionary definitions—"to become stationary."

Having seen some thirty graduating classes go forth into the world and many of these men return at varying periods, I have observed with great interest the changes after five, ten or twenty years. It usually takes only a short period of observation to make an appraisal—and I do not mean the external evidences of opulence, but of growth in mental stature. One man who perhaps is remembered as one of the mediocre members of his class will give evidence of surprising growth and development. He is alert, keen-minded and well informed. Another who was well up toward the head of his class in his student days will be just about the same fellow he was ten or fifteen years before. If anything he impresses one as not being quite as keen as he was when he left the college doors. Inquiring more closely into his career it will be found that he has failed to fulfill the promise of his earlier days.

Now, success or failure in the real sense is admittedly due to many factors, not all of which are entirely under the control of the individual, but in this connection I like to recall that charming, much quoted, and often distorted address of Dr. Osler's which he called the Fixed Period. It will be remembered that he likened the changes of the human mind to a disease, progeria—a condition in which the child or youth quickly takes on the appearance of the aged. In this analogy Osler refers to those individuals whose mental development fails to keep pace with the life cycle—a common and widespread malady which must be consciously fought and stoutly resisted from youth to old age; it is both rural and urban in its distribution and spares not those in any of the walks of life. The young medical man after leaving college and hospital faces the most important crisis in his intellectual life. In spite of a busy routine he is in danger of this insidious malady in which the victim first has mental arrest and later mental deterioration. To many it is a painless process and the victim may be quite unaware of its presence, like another and highly advertised malady—recognized, but not spoken of by one's best friends. Perhaps the best remedy for maintaining one's mental plasticity is the habit of thinking. A modern American philosopher has written a paper he calls "The Social Nature of Thinking," his thesis being that the intellectual life can be realized only in common with others in a social community. Applied to the problem of our young medical man it means that his habit of thinking can be best stimulated by frequent or continuous contacts with the minds of others having a community of interest.

One of the striking and to my mind most important movements in the field of medicine is the growing custom of men to attend medical meetings of all kinds in increasing numbers. Some of our post-graduate clinics have grown to enormous size. Many men find it essential to leave their practice one or more times each year and spend time at a medical center getting both information and inspiration—keeping their mental metabolic rates at a normal level. In my opinion the Medical Society of Virginia has never done anything more important in

its history than to actively interest itself in the problem of continued education. The particular methods now being employed in Virginia are receiving attention and favorable comment from various and even remote sources. Whether we have hit upon the best plan to accomplish our purposes or whether there be objectionable features, are questions to which we should have open minds, but let us not relax our efforts in contributing in what measure we can to this important phase of medical education.

I would not like to close my remarks or let this occasion pass without an expression of real satisfaction and pleasure at the spirit of cooperation and mutual good will existing between the two medical schools in the State, as well as a noticeable absence of friction between the teaching institution and the practitioner. In certain states of the union there has been a regrettable lack of understanding or perhaps a want of proper consideration between teaching hospitals and clinics on the one hand and practitioners of medicine on the other. These misunderstandings occur very easily, particularly in periods of economic stress such as we now face. It is the plain duty of teaching clinics at all times to avoid any undue or unnecessary encroachment upon the field of private practice and to limit the service given in such clinics as far as possible to those who have just claim upon the bounty of the State or upon the service of the community, and to such other activities as may be fairly demanded by medical education and progress. Those charged with the responsibility of conducting our institutions on the other hand have a right to expect proper facilities for an adequate range of clinical teaching and investigation. To this end they should expect from the practitioner and from organized medicine not only an attitude of toleration and sympathetic understanding, but one of informed and active cooperation.

At the present time the very life of our teaching hospitals in this State is seriously threatened by reason of curtailment in state appropriations and diminution in other sources of revenue. The situation is a most serious one and if time permitted I would like to take you into our confidence, more fully explain our difficulties and problems and enlist your aid. But for want of time, I must content myself by reverting again to the words of the father of medicine and asking that you renew your Oath of allegiance, not in the name of Apollo, the physician, and Aesculapius and the god and goddess, but in the name of the unknown God of Mars Hill, and of humanity, and of civilization, to the end that the torch of medical learning may remain aloft and undimmed.

## INROADS MADE BY OPTOMETRY ON WORK OF OCULISTS.*

FRANK P. SMART, M. D., Norfolk, Va.

I have decided not to read a scientific paper, nor to attempt an oration, but merely to bring to your attention a condition of affairs which fortunately we have very largely escaped so far in this State, but which I understand is causing considerable trouble further north, and that is the inroads that the practice of optometry is making on the work of the oculists to the detriment of the public.

Of course we have always had with us the refracting optician or peddler of spectacles, but recently he has become ambitious, has taken a short course from some school which gives him the degree of doctor of optometry. He opens a shop, claims to be our superior in the art of refracting, claims to be able to diagnose ocular troubles which glasses will not correct, and advertises strongly the fact that doctors are incompetent to examine eyes for glasses, and that the methods used by oculists are antiquated and dangerous.

Almost all that I will have to say will be quotations from their journals, the *Optical Journal and Review*, and the *Western Optical World*. The following is taken from the *O. J. & R.*, of October 4, 1929. Eight thousand attractive cards, 3½x6 inches, were distributed by optometrists of Union City, N. J., and following is taken from the text of the card: "A message to parents, do you know that the use of drops in examining eyes of adults or children is unnecessary? They are dangerous. The following reputable ophthalmologist opposes the use of drops." Then a statement is quoted from Dr. Snellen, of Holland, to the effect that drops may be harmful. A further statement credited to Dr. L. K. Hirschberg, of Johns Hopkins College, is as follows: "Glasses can be fitted much better without drops than with drops. The use of various atropine drops is responsible for many mistakes made by the best oculists in fitting

*Address by the President before the Virginia Society of Oto-Laryngology and Ophthalmology, at Harrisonburg, Va., May 6, 1933.

glasses." The card goes on to say that the "best medical opinion supports optometry," and gives a list of the names and addresses of local optometrists.

The *Western Optical World*, for July, 1930, says, "The public has legal assurance of qualifications in Optometrists, and no such assurance when going to the eye physician. The physician should be compelled to qualify under the Optometry laws. He should not be exempt from them and it is not one bit to his credit that he is, but rather to his discredit."

I think I am right in stating that the Optometrists have supported lobbies in at least one legislature in an effort to make refraction their legal field exclusively, and to force all doctors who wish to practice refraction to take the Optometry examinations of their State. There is no question that the Optometrists are a band of crusaders who are wide awake, taking advantage of every opportunity to strengthen their position, to drive out the doctors from the field of refraction and to discredit the medical profession in that field as completely as they can, as evidenced by the following quotations from the *O. J. & R.* In an editorial dated April 24, 1931, we find the following sentence, "Optometry must either shut out oculists from refractive practice or take over some parts of ophthalmology."

The attitude of the Optometrists reminds me very much of the opening paragraph of the chapter on Osteopathy, in a book by Charles W. Warner, entitled "Quacks." "Osteopathy," he says, "is the most pernicious form of quackery in the country today, being merely a scheme whereby incompetent men endeavor to slip into the practice of medicine through the back door. It had its inception in ignorance and has been kept alive by fraud and deception."

In their issue of January 31, 1930, is an account of their controversy with health authorities in which they threatened to go to court to force school nurses to allow them to examine eyes of the children that were found defective. A *United States Public Health Bulletin* made the following conservative statement: "Adults who use their eyes a great deal, such as clerks and school teachers, should have their eyes examined at least every two years. Examination of the eyes should always be made by physicians who have made a study of the eye their specialty, and an examination made by such a physician is apt to be thorough and dependable. Often an examination of the eyes, if made by a competent specialist, reveals conditions related to the general health which are often unsuspected." To show the unscrupulous methods they use in their propaganda they made much of the statement in the above quotation that the oculists examination *is apt* to be dependable. They twisted it and italicized the words so as to imply that the real meaning of the bulletin was that the patient has a chance, but probably a slim one, of getting a thorough examination. They furthermore imply that he is certain of getting a thorough examination if he employs an Optometrist. On the whole they disapprove the bulletin because it said that the eyes should always be examined by physicians, and they brought sufficient pressure to bear on the Bureau, through political means, to cause them to discontinue the distribution of this bulletin and to destroy those not yet distributed. (*O. J. & R.*, November 1, 1929.)

The Optometrists assume that whenever one refracts without the use of drops he is practicing Optometry. They use all sorts of advertising to invade a field which properly belongs to oculists, not merely setting forth their alleged virtues, but actively denouncing the practice of the oculists in a fashion which is almost libelous. However, as soon as any educational articles with regard to the eye are given to the public, the Optometrists fairly blister us with their sarcasm. The most dignified, and at the same time the laziest way of meeting these attacks is to ignore them, which is all very well as long as the competition is not serious, but I understand that in some of the northern States they have made such inroads on the practice of refraction that they predict that within ten or twelve years they will be doing 85 per cent of all the refractive work done. In a recent private letter from a friend in Philadelphia, I learn that an ethical dispensing optician was unable to make a go of his business so that he decided to have some one to do refractions in his shop. His advertisement brought answers from a hundred heretofore ethical oculists who were anxious to get the position because they were hungry. This shows to what extent the oculists are being driven today for their livelihood in some cities. In Philadelphia, the Pennsylvania College of Optometry examined around 15,000 patients last year and furnished 1,000 pair of glasses

free to indigent patients. This 15,000 examinations at the College added to the private practices of all of the Philadelphia Optometrists, must certainly constitute a very large percentage of all the refractions done in Philadelphia last year, all of which should properly have been done by oculists. This seems to me to show that they are making rapid strides in their effort to usurp our field, a field that may soon belong to them as truly as Manchukuo belongs to Japan, and they are winning this field by practices that are just about as ethical as those employed by Japan, while we are about as resistless and somnolent as China was in allowing Manchuria to be stolen from her.

The following is from the *O. J. & R.*, published less than two months ago: "In ocular surgery and medical treatment, the oculists have a field of public service so broad that they have neither time nor inclination to perfect themselves in all the technique required for ocular refraction, in which optometrists are pre-eminent.

"It happens now and then that an overzealous oculist, in a speech before his fellows or in an article published in a medical journal, scolds oculists as a body for inferiority in ocular refraction. In his heart, he knows that the optometrists are the scientific specialists in refraction; he knows that oculists in general, are inferior in this service.

"Let the good oculists endeavor to improve themselves in the vast field of ocular surgery and medicine but keep out of the field of optometric services in which their training and various circumstances preclude them from giving adequate service."

It would seem that all refraction is exclusively the field of the optometrists, that it is a specialty within our specialty, or rather above it. We oculists have had to climb the foothills of a rigid pre-medical course, and spent four years laboring at the lower slopes of the mountain, to arrive at the level where we were declared fit by the State Board of Medical Examiners to treat all bodily ailments. We have toiled on up through a medical internship. We have had to scale steeper heights in our specializing course and our special internship, expecting to reach the pinnacle of our chosen line of endeavor, but in this we are sadly disappointed. We find that the summit of the peak is pre-empted by a group of super-men who bar our further progress, these optometrists who claim that only they are fit to occupy this region. These marvels are high school boys who were introduced into the mysteries of vision in a lens grinding shop and after a short technical course were able to jump from the plane occupied by the laity and in one bound reach this pinnacle toward which we have been struggling for years, where the air is too rare for our lungs, the labors too delicate for our clumsy fingers, the line of reason too refined for our untrained minds, the ideas too exalted to be desecrated by one who could reach this height only by hard work and steady climbing. These paragons of perfection will allow us to restore beauty to the face and function to the eyes by muscle operations; they will allow us to relieve pain and save vision by treating glaucoma medically or surgically; they even allow us to make the blind to see by removing cataracts, but when we would give them glasses we are trespassing upon ground too sacred to be profaned by our presence, a region where only optometrists may function without desecration.

Optometry offers such an attractive way for underprivileged boys to attain quickly and inexpensively a socalled profession and a degree, that we can expect the breed to show a fecundity approaching that of the guinea pig. In other words, I believe that it constitutes a menace to our profession, or rather promises to be an annoyance to our profession, which will become more and more serious as time passes. No matter how ethical our practices may be, how exalted our ideals, how humane our motives, from a purely practical standpoint we must look after our finances. When all is said and done, we have only our services to sell to the public, and if they do not buy we suffer. It would not help us if we should follow the lead of the optometrists themselves and indulge in abusive advertising, but I do think that we should be alert to all of the legislative efforts of the optometrists, to keep them from encroaching further into a field which they are unqualified to occupy and where they could do untold damage to the public. It may hurt our pride to consider them as rivals, but they are unquestionably encroaching heavily on our domain, largely through advertising, and it behooves us to do three things: First, we should not "give comfort to the enemy" by allowing an optometrist to be the one who fills our prescriptions, if there is a competent optician available; second,

we should in all seriousness see to it that our refractive technique and activities are in every respect superior to that employed by the optometrist; third, in a dignified and ethical way we should let the public know the services that are available through us alone, and the differences between ourselves and these optometrists who use the title "doctor" so conspicuously.

Aside from these few suggestions, I will point no moral, I simply present the facts as gleaned chiefly from the optometric journals for your consideration and, even if no action is deemed wise at present, it certainly behooves us to be alive to the situation.

810 *Medical Arts Building.*

## THE SYPHILIS PROBLEM.*

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The foundation of any public health plan, in order to stand, must rest on a proper knowledge of demography as applied to particular population groups. Without this knowledge no greatly successful achievement may be expected in this field. Not only is it important to know how many people and where they may be who reside within the compass of a given sanitary area, but also how they are constituted in respect of age, sex, and racial distribution; what is the condition of their sanitary environment; what are the morbidity and mortality rates and how do these compare with other sections of the country; what diseases most seriously affect the community health, individual happiness, and economic efficiency; what are the underlying factors chiefly responsible for the presence and continued existence of special diseases which are menaces to the welfare of a part, or as may be of the whole people. These fundamentals are well known to all experienced health officers but unfortunately to but few practicing physicians without whose sympathetic support no public health control program can succeed.

Probably in no other class of diseases is this fact so evident as in the venereal diseases, notably syphilis. It seems fitting, therefore, that the attempt be made to bring to the attention of this medical audience something of the immensity and seriousness of syphilis as a health problem, arouse those of you who treat this disease in general practice to a sense of individual responsibility — the careful specialist needs no awakening—and indicate the manner in which the private practitioner can most effectively contribute to its eradication.

*Read before the Norfolk County Medical Society, Norfolk, Va., April 17, 1933.

### Prevalence of Cases of Syphilis in the United States

The magnitude of the syphilis problem is almost unbelievable. In 1927 the United States Public Health Service, in cooperation with other organizations interested in the control of venereal diseases, made a concerted effort to determine if possible the extent and distribution of syphilis in the continental area. The plan of procedure followed was to supply each person and institution authorized to treat the sick in the community selected for survey with a questionnaire on which to record the number of cases under treatment or observation on a given date. The requested data were classified by sex and color of the patient and stage of the disease. Syphilis was designated as early in all cases in which one year or less had elapsed since the probable date of infection and as late in all cases where more than one year had elapsed since infection. As far as it was possible all factors affecting the completeness and accuracy of the data were accounted for.

From these data it was estimated that the number of persons constantly under treatment or observation for syphilis in the continental United States in 1927 was 643,000. This estimate is based on the cases reported as actually under treatment or observation for syphilis by all medical sources in twenty-five representative communities throughout the United States, and included 29,918 physicians, 828 other private practitioners, and 1,101 public institutions responsible for the medical care and treatment of 24,498,000 people. The case rate for syphilis among the whites was found to be 4 per 1,000 population and among the Negroes 7.2 per 1,000. It is believed that these findings among approximately 20 per cent of the Nation's population selected from the most rural territory to the great cities of the country are a reliable index and represent the very minimum of the syphilitic population constantly under medical care day by day.

### Incidence of New Cases

In more recent prevalence studies there was included in the questionnaire a request for the

number of patients with syphilis who reported for the first time for observation or treatment during the preceding month. These data were assembled as the base for estimating the number of syphilitics who sought treatment in the early stage of their infection.

Philadelphia was the first community surveyed which had included in the questionnaire an inquiry into the incidence of the disease in a population of approximately two million. Data have now been collected from twenty-four communities with a population of 11,740,-561, or 9.4 per cent of the total population of the continental United States. It is of great interest to note, that with more than five times the population, including persons from rural areas as well as a large percentage of Negroes, the composite rate for the incidence of fresh infections of syphilis is practically unchanged. These rates for early syphilis range from less than 1 per 1,000 population to 24 per 1,000 and give a resultant rate which very closely approximates that found in Philadelphia in 1929, and also lend an added weight to the estimate of 423,000 cases of fresh infections in the United States each year based on the Philadelphia data.

Another point of interest is that for every case of syphilis reporting for treatment in the early stages of the disease one case delays seeking treatment until the disease has reached at least the second year of the infection. The seriousness of this neglect is reflected not only in the lessening of chances for cure for the infected individual but also in the greater danger to the general public through the uncontrolled spread of infection.

### The Influence of Race

It is very generally recognized by public health officials that there is an undue infant and maternal mortality, an abnormal tuberculosis death rate and an excessive prevalence of venereal diseases among Negroes, and that the rate of cases of these diseases under treatment is much higher in certain geographical areas than in others. Moreover, this situation is complicated by the inadequacy of medical service for Negroes in practically all rural communities, the lack of free treatment facilities, the large number of infected persons who fail to continue treatment until cured, the disinclination of many physicians to treat this class of cases, the inability of most Negroes and many white people to pay the high fees demanded for this form of medical service, and the disinclination of the average Negro to seek any prolonged treatment for an ailment that for long periods of time occasions but slight if any discomfort.

These facts caused the Public Health Service to submit a recommendation, in 1929, to the Julius Rosenwald Fund, long interested in the health and welfare of the Negro, for cooperation with the Public Health Service and State and local health departments in a study and demonstration of the most practical and efficient methods of applying existing knowledge to this problem, determining the prevalence of syphilis in a representative group of Negroes, ascertaining the feasibility of organized mass control, and measuring the effect upon the incidence of syphilis of organized treatment of representative groups. This recommendation was acted on favorably by the Executive Committee of the Fund and moneys were allotted to health departments for the conduct of syphilis control measures in six southern States recommended by the Surgeon General of the United States Public Health Service on the basis of surveys and reports by Service officers and agreements with the respective State health officers in accordance with approved policy and procedure.

The procedure followed for the organization of the several projects was practically the same in each of the six counties included in the demonstrations, with the exception of one county where case finding and treatment were carried out on the family unit instead of the individual basis. The proposed plan of procedure was first brought to the attention of each county medical society, the objectives and probable duration of the demonstration were outlined, and their cooperation and indorsement were solicited. In addition, the support of educators and other school authorities, ministers of the gospel, planters, and the several business interests was sought and secured. Wide publicity was given to the project through addresses made in churches, in schools, and at public meetings, supplemented by the distribution of handbills giving the information that individuals desiring to have their blood tested might have it done at a designated place and at a given date and hour.

Blood specimens were taken without selection at all ages in order to determine the syphilis prevalence rate and to discover cases requiring treatment in each community. Each

positive case was given a careful physical examination and a Wassermann check. Finally, all cases still positive on recheck were placed on suitable treatment.

*Results.* The important findings of these demonstrations of organized control of syphilis may be summarized as follows:

Reasonably accurate determination of the actual prevalence of syphilis in a given population.

The amount of treatment that may be expected to be administered to an individual case.

The approximate cost of a preliminary Wassermann survey (case finding), reasonable follow-up service, treatment, and repeat serological tests.

Of a total of 27,131 individuals included in the serological survey made as a preliminary to the establishment of treatment facilities, 5,300 or 19.5 per cent gave a positive Wassermann reaction. The high prevalence rate of 195 per 1,000 shown by this intensive and individualized method of approach to the problem is in distinct contrast with the rate of 7.2 per 1,000 for cases constantly under observation or treatment revealed by the one-day census method described above. It is very apparent, therefore, that mass control methods, wherever they can be carried out, are conducive to the more accurate determination of the actual syphilis prevalence rates than the one-day census.

The lowest prevalence rates were observed in two counties that have or previously have had treatment facilities for this class of the population, a finding of practical public health significance.

A comparison of the results of the one-day census survey with those of these demonstrations indicates that in these areas only one in twenty-five infected Negroes ever seek treatment, and that the actual prevalence rates are from ten to fifty times higher.

Under the scheme of treatment carried out in these demonstrations, each patient starting treatment averaged 8.4 doses of neoarsphenamine intravenously and 72.6 mercurial inunctions. In other words, 32 per cent of the patients in every county received from one to seven intravenous injections of neoarsphenamine; that is, 68 per cent of them received seven or more doses. The significance of this amount of treatment will be shown further on.

*Per Capita Cost.* Calculated on an annual basis, the per capita cost for case finding, case finding plus treatment of positive primary survey cases, and the treatment load, was 54 cents, $2.30, and $8.60, respectively. The cumulative syphilis load constitutes the cases uncovered by the preliminary serological survey plus those cases that applied for treatment subsequent to the preliminary survey.

Bromberg and Davis, in an article on Syphilis as an Economic Problem, appearing in the *Journal of Social Hygiene*, Vol. XVIII, No. 7, October, 1932, on analysis of the cost of treatment, conclude that the average cost of the first year of treatment of the disease in its early or middle stages was $268 to $300 if the case was handled by a general practitioner, and from $485 to $1,050 if a specialist was employed.

It is estimated that before the depression more than half the families in the United States were living on incomes of $1,500 to $2,500, out of which they might possibly set aside from $60 to $80 a year as the cost of medical care for the whole family. On this basis 80 per cent of those infected could not afford to pay for adequate treatment at the rates charged by private physicians, half could not afford to pay full rates at clinics, and fully a third must receive treatment free or at a nominal charge. But few of the individuals included in this mass control study were able to pay anything at all for treatment. The low economic status of this population group and the paucity of treatment facilities no doubt contributed largely to the high prevalance rate encountered.

Of great practical interest from the financial standpoint is the observation that the proportion of cases of early syphilis to the cases of late syphilis admitted to treatment was 6 to 171. It is evident that the cost of syphilis control may be greatly lessened by limiting the expenditures as far as possible to case finding and follow-up service and the treatment of cases of early syphilis, clinically symptomatic late syphilis, congenital syphilis, and syphilis in pregnancy.

I have dwelt at such length on these demonstration studies because the results clearly indicate that mass control of syphilis among Negroes in the south is both possible and practicable and that the method offers a new and promising approach to the ultimate control of this disease in all classes of the population at reasonable cost.

Trend of Syphilis in the United States

In the attempt to estimate the trend of syphilis cases in the United States a resurvey was made in 1930 of sixteen of the twenty-five communities included in the 1927 prevalence survey, namely, New York State exclusive of New York City, the whole State of Oregon, eight cities of 100,000 or less population, six counties in four other States—Arkansas, Illinois, Kentucky, and West Virginia,—with a combined population of approximately 7,000,000. The changed rate was found to range from a downward trend of 4.4 per cent in the composite fourteen small communities, to an upward trend of 17.6 per cent for the State of Oregon and 15.7 per cent for upstate New York, or an average case rate increase of 11.6 per cent for the total sixteen communities resurveyed.

Of great public health importance is the fact that there was a 6 per cent increase in the case rate per 1,000 population of patients seeking treatment during the first year of infection in the total resurveyed territory during the three-year period, and a corresponding increase of 14 per cent in the case rate for those coming to treatment in the late stages of the disease. It matters not if additional infections do occur, syphilis will eventually be brought under control if the medical men will only do their share and if the people can be inspired to apply promptly for treatment in the early and most infectious stage of the disease and continue treatment long enough to render them noninfectious. Unfortunately, despite the increase in patients with early syphilis seeking treatment, it was found that approximately one-half of the infected individuals never seek treatment until the disease is in the late stages when the most that can be hoped for by treatment is the probable arrest of active syphilitic processes.

*Trend of Private Practice and Clinic Cases.* Another important revelation is the shift of the treatment load from the private physician to the public clinic, represented by a 7 per cent increase in the public clinic case rate. In 1927, 30.7 per cent of the cases were treated in public clinics and 69.3 per cent in private practice, whereas, in 1930, 37.5 per cent of the cases were treated in public clinics and 62.5 per cent in private practice. An encouraging feature of this increased prevalence rate is the fact that the higher percentage of cases in both public clinics and in private practice was in the early stage of the disease, because nothing will be so effective for the ultimate conquest of syphilis as to have the patient seek and receive early treatment.

We have thus far attempted to point out the prevalence of syphilis in both the white and Negro population; to emphasize the immensity of this important public health problem; to indicate that the prevalence shown by the one-day census surveys must be considered the minimum because of the obviously large number of latent syphilities who are under treatment and the undoubtedly great number of individuals who have never sought treatment. These modifying factors are clearly revealed by the mass control measures carried out among Negroes which gave a prevalence rate of 195 per 1,000 population as compared with the 7.2 rate per 1,000 shown by the one-day census prevalence surveys. Finally, we have pointed out that annually 423,000 syphilities apply for treatment in the early stage of the infection who never before have been treated, and that during the three-year interval, 1927-1930, there has been an increase of 11.6 per cent in the cases per 1,000 population of syphilis constantly under observation or treatment. These observations bring us to the crux of the syphilis control situation. They indicate that the measures employed by both official and volunteer agencies up to the present time have not made the desired impress on this problem.

Many factors are responsible for this failure or lack of accomplishment, not the least of which is that syphilis is practically always acquired through sexual contact with the frequent implication of sexual irregularity, which is a serious handicap to the health officer in the application of remedies as they would be applied to other disease menaces to individual and community health. If a specific remedy for tuberculosis were available as is the case for syphilis, tuberculosis would have been practically eliminated as an individual medical social problem. As a matter of fact, the case rate for syphilis per 1,000 population under treatment or observation has increased 11.6 per cent during the three-year interval, 1927-1930, while that for tuberculosis has declined 9.4 per cent within this period in sixteen States and the District of Columbia. The wide dissemination of health information, the segrega-

tion of open cases, and the application of hygienic measures responsible for this decline, while of some value for the control of syphilis, are of minor import because, as tersely stated by a distinguished authority, they do not stop the basic urge which underlies its prevalence.

The problem of syphilis control is also complicated by the duration of the disease and the cost of treatment, which causes many physicians to shift the responsibility to the county and State for the treatment of infectious individuals when they are no longer able to pay the required fee even in part, by the far too frequent disinclination and failure to advise the patient of the necessity for sustained treatment after the disappearance of obvious lesions and symptoms, and by the very general indifference of appropriating bodies, who seldom if ever make available to health departments funds anywhere near commensurate with the magnitude and seriousness of the problem. As a result of this situation many individuals are inadequately treated, undergo infectious relapse, and still further contribute to the spread of the disease because the infectious nature of open lesions in relapse is not usually recognized by the patient. It is very evident, therefore, in the present stage of our civic development, that control is not a single responsibility. It has been admirably stated by Stokes that the prevention of syphilis is the outstanding example of the greater effectiveness of the State as compared with individual effort in the suppression of the disease. At the same time, and this is a matter of deep concern to the individual practitioner, it is the ideal illustration of the value of the chemotherapeutic control of infectiousness by germ destroying drugs. This concept predicates a dual responsibility, and indicates that the final solution of the problem rests not in the hands of the health authorities alone with their police power, not altogether with the specialist who may be relied on to observe modern methods of treatment, but more particularly with the run-of-the-mill doctor who is called on to diagnose and treat syphilis in the routine of private practice.

### The Role of the Health Department

No serious attempt, and but slight progress, had been made against the venereal disease problem in general by the health authorities until the entry of the United States into the World War, when the country was startled by the high rate of venereal diseases found on medical examinations of draftees in order to determine their fitness for military service. Prior to this time and even for some time after, their main reliance for the control of syphilis was education, moral suasion, and law enforcement. Unfortunately, no one of these measures alone or even in combination will ever completely solve the problem.

Education undoubtedly will prevent some exposures and may induce a number of individuals to seek adequate treatment who otherwise neglect to do so, but education does not reach all groups of society. There has probably never been a time in the history of the public health movement when there was wider dissemination of public health information than at the present time, yet not less than 50 per cent of syphilitics refrain from any form of treatment during the first year of the disease, when they are most infectious.

Law enforcement is of value in the temporary control of recalcitrant individuals who fail to take advantage of existing facilities for treatment, or knowingly expose others to infection, but no one familiar with the manifold manifestations of the disease seriously expects to influence its prevalence by the provision of segregated districts and by the inspection of prostitutes. The statutes of practically every State contain law enforcement provisions, yet syphilis continues to increase. The intent of the legal requirement of prenuptial examination as a prerequisite to the issuance of a marriage certificate is practically nullified by the lack of uniformity of such laws and by the inadequacy of such examinations as usually are made.

Prophylaxis (personal disinfection), once so high in the estimation of the public health officer as a control measure, is now known to be ineffective except under military control, and even then only partially so because of the frequent failure to apply prophylaxis promptly after exposure.

Fortunately, there is now a more general and intensive interest manifested in syphilis control by the health authorities than formerly, so that more and more the State control programs are being integrated with the general health programs along the following lines:

I. Securing better reporting of cases.

II. Providing adequate diagnostic and treatment facilities for all classes of the population.

III. Establishing social or public health nursing follow-up service for the return of lapsing cases, investigation of sources of infection and uncovering contacts.

IV. Appointing cooperating clinicians at strategic points, with the advice and consent of the local medical society and the local health officer, and furnishing them with drugs for the treatment of indigent and semi-indigent syphilitics.

V. Encouraging the making of routine Wassermanns in both hospital and private practice, with special emphasis on the routine employment of this procedure in the case of expectant mothers for the prevention of stillbirths and congenital syphilis.

VI. Enlisting the cooperation of industry in the control of syphilis among employees for safeguarding the community health, increasing the efficiency of the individual worker, and reducing the number of accidents among those gainfully employed.

VII. Enlisting the cooperation of all physicians in combating syphilis.

The time limit allowed me does not permit of the enumeration of the manifold ways in which every doctor can be of assistance to the health authorities in the solution of the syphilis problem, and therefore but brief mention can be made of only a few of the more important. Of these, I shall first mention:

1. By the early and exact diagnosis of cases. It should be borne in mind that syphilis may be acquired without the development of an initial lesion and the unhappy victim may ignorantly contribute to the spread of the disease; that the open moist lesions of syphilis wherever located are potential sources of infection which may be temporarily rendered noninfectious for periods of varying duration by the use of arsphenamine; that every indolent, painless extra-genital lesion be viewed with grave suspicion and syphilis eliminated as a causative factor.

There is evidence to indicate that a probable 100 per cent cure may be effected in cases of sero-negative primary syphilis if subjected to prompt, continuous, and sufficiently prolonged treatment. Delay until the blood serum becomes positive reduces the possibility of cure under the best treatment by about 5 to 20 per cent. The availability of reliable modern methods of diagnosis makes it tantamount to criminal negligence to rely on the diagnosis of chancre by inspection and history of exposure. Therefore, dark field examinations of suspects should be encouraged, the chancre serum should be Wassermann tested, and, in case of failure of both of these, repeated blood serum tests for such length of time as may be necessary for the diagnosis or elimination of syphilis.

*Reliability of Dark Field Diagnosis in Early Syphilis.* In a series of papers* based on cooperative clinical studies in the treatment of syphilis, conducted by a group of five large syphilis clinics with the assistance of the United States Public Health Service, positive dark field examinations were obtained in 94.4 per cent of 162 cases of sero-negative syphilis in which a dark field examination was made, 90.7 per cent of the genital lesions of secondary syphilis in which a dark field examination was made, 85.6 per cent in mouth and throat lesions, and 79.3 per cent in cutaneous lesions including condylomas.

Another important point of practical significance brought out in these studies is the constancy of the dark field findings throughout a comparatively long period of time, ranging from sero-positive primary to delayed secondaries after the first year of the disease.

No genital lesion should receive any local treatment until at least three consecutive dark field examinations are found to be negative or until it has been otherwise identified as syphilitic. Antiseptics, especially mercurials, render the finding of the Spirochaeta pallida difficult or impossible for a time. If any local antiseptic treatment has been given a suspected lesion, its use should be discontinued, and the lesion thoroughly cleansed with soap and water followed with hot normal saline soaks for twenty-four hours before repeating the dark field examination.

*Chancre Serum Wassermann Reaction.* The serum obtained from an untreated suspected primary lesion may be positive days before the blood Wassermann becomes positive. It should be repeatedly resorted to in all negative dark field cases.

*Comparative Value of Dark Field Examinations and Blood Wassermann Tests in the Diagnosis of Primary Syphilis.* Moore states that when the chancre is less than ten days old the dark field is 90 to 95 per cent efficient; in this same time the blood Wassermann test is usually negative, but that after the fifth week the per-

*Reprint 41 from Ven. Dis. Inf., Vol. XIII, Nos. 4, 5, 6, 7. 1932.

centage of positive dark field examinations in undoubted chancres declines and the percentage of positive Wassermann reactions rises so that by the sixth week the reaction is almost always positive.

Of the total of 3,244 early syphilis patients included in the cooperative studies mentioned above, 10.5 per cent sought treatment in the sero-negative primary stage: 70.4 per cent in the secondary stage with positive blood Wassermann reaction. The blood Wassermann reaction was negative in secondary syphilis in 1.0 per cent of patients.

When both the dark field and local serum reaction are repeatedly negative, the blood Wassermann should be tested weekly for at least one month and approximately every two weeks until three months have elapsed.

2. By notification of cases, sources of infection, and contacts.

Despite the statutory requirement of notification in practically all the States it is well known that great laxity is manifested by physicians as a general thing in the observance of this legal requirement. Important steps in the control of syphilis are the tracing of every case to its source and its elimination as a factor in the further spread of infection, and the uncovering of contacts so that infected individuals may promptly be brought to treatment and the potential syphilitic induced to subject himself to a desirable period of careful medical supervision. Probably in no other way can a physician directly cooperate with the health department which is vested with the necessary police power to exercise corrective measures than by prompt and complete notification of cases in such manner to be satisfactory to the health officer, protect the physician, and shield the patient. On other other hand, the health department should be of great service to the physician by taking blood specimens when requested, referring non-indigent cases for treatment, supplying follow-up service for lapsed cases, and in many other ways obvious to all who have given thought to the problem.

3. By the administration of treatment in adequate amount to render non-infectious all cases of syphilis in the early infectious stages of the disease and to prevent infectious relapse.

Houston, I think it is, has stated that no serious disease is so poorly handled and so miserably neglected as syphilis. Although the literature on the etiology, pathology, and clinical manifestations and the refinements of treatment of syphilis is voluminous, and although there are articles in every text-book which deal with the diagnosis and general management of the disease, there is but little to direct the general practitioner in the details of treatment of an individual case. Consideration of the time element in the duration of infection and securing the cooperation of the patient in the administration of prompt and adequate treatment are most important factors in the suppression of syphilis by preventing infectious relapse, of which the public health significance can scarcely be over-estimated. The objective and subjective symptoms of early syphilis soon disappear under treatment. The average patient with early syphilis, after a few doses of arsphenamine, has probably never felt better in his life, and, unless the physician is successful in securing his confidence and cooperation, is prone to discontinue treatment, undergo infectious relapse and bring about wider dissemination of disease, because the lesions are not recognized as infectious by the patient, nor even as syphilitic in character.

In a study of infectious relapse the records of approximately 6,000 cases of early syphilis were subjected to scrutiny, and of this total 360, or 6.05 per cent, developed mucocutaneous relapse. The results of treatment observed in this study indicate that the prevention of relapse is a matter of prolongation of treatment. For example, 35 per cent of relapsed patients had less than five doses of arsphenamine, and, adopting less than twenty injections as the median, 87 per cent of the relapses fall within the group receiving less than this amount of treatment. The critical point for the large proportion of patients with reference to the prevention of relapses lies within the fifth and ninth injections of arsphenamine.

The duration of treatment of early syphilis is still a matter of considerable worriment to non-specialists. Some patients may be cured by one or two courses of arsphenamine with a heavy metal; others require very much more treatment. Using a system of continuous treatment with alternating courses of arsphenamine and mercury, Moore and Kemp* obtained the following results:

Eight doses of arsphenamine or less without mercury, 10 per cent cured.

*Moore, J. E., and Kemp, J. E.: The Treatment of Early Syphilis. II. Clinical Results in 402 Patients. Bull. Johns Hopkins Hosp., Baltimore, 1926, XXXIX, 16.

Two courses of arsphenamine with interim mercury, 37 per cent cured.

Three courses of arsphenamine with interim mercury, 56 per cent cured.

Four or more courses of arsphenamine with interim mercury, 78 per cent cured.

If cooperative and non-cooperative patients are grouped together, as in practice they must be, the chance of ultimate cure is almost twice as great when treatment is begun within the first two weeks of infection (sero-negative primary syphilis) as when it is delayed until the appearance of secondary manifestations.

4. Routine Wassermann on cases with special reference to pregnant women.

Although the disease is usually milder in women than in men, the most serious factor in women is the chance of the transmission of the disease to the offspring. In fact, a woman may continue to transmit syphilis to her child during the whole child-bearing period of her life due to the intimacy of placental contact.

Boas and Gammeltoft quoted by Nabarro (*Brit. J. Ven. Dis.*, 1928, IV, 107), found in a total of 201 cases of syphilitic mothers receiving no treatment, 96.5 per cent of the children syphilitic and only 3.5 per cent healthy. On the other hand, of 105 mothers receiving arsphenamine during, or both before and during pregnancy, but from 15 to 20 per cent of the children were syphilitic, and from 80 to 85 per cent were normal. It is clear, therefore, that the recognition of syphilis in the pregnant woman and the administration of combined arsphenamine and heavy metal treatment causes great reduction in the transmission of prenatal syphilis. But this is not all of the story. The recognition of syphilis early in pregnancy has also the effect of minimizing the number of antenatal and neonatal deaths due to this causative factor and in principle contributes enormously to the limitation of the spread of the disease.

In conclusion, may I not quote the statement of one of the leading syphilographers of this country who says that "the responsibility for the modern control of the infectiousness of syphilis, and therefore its spread, is not in the hands of the church with its preaching, the law with its mandates, or the laboratory with its drugs, but is to be met or ignored by the every-day doctor."

## EARLY DIAGNOSTIC SIGNS OF GLAUCOMA.*

THOMAS D. ALLEN, M. D., Chicago, Ill.

Some ten or twelve years ago, while looking over private case records which I had made, or helped make, I found myself repeatedly criticizing the work in no uncertain terms. I reproved myself: "Why didn't I take the tension the first time I saw this patient?" or "I should have taken the fields," or "I wish I'd taken the near-point of accommodation"; or "If I'd only put him in the hospital at once and taken tension every four hours," etc. Now as I look over the records I can tell just about the time of that private bit of introspection. My chief, Dr. William H. Wilder, has directed me in this work and under his supervision an office technique has been developed by which early diagnostic signs of glaucoma are, I think, usually found.

In spite of the fact that much has been written about this group of symptoms called collectively "glaucoma," we have felt that the subject has not received sufficient emphasis, especially from the practical standpoint. My endeavor this morning will be not so much to bring *new* knowledge to you, as it will be to present the subject matter in another light so as to stimulate you to research work with every one of your patients. Every patient, especially the glaucomatous patient, is an individual problem. The earlier we can diagnose, the earlier we can start our study on causative factors in the case; the sooner we can start treatment, the more sight we can save. To accomplish such results, let me emphasize first the value of a good history and a thorough physical examination.

### History

The very important duty of history-taking is often relegated to the nurse or secretary, thus depriving both the physician and patient of that personal first contact which inspires mutual understanding and confidence. The doctor himself should take the history, if it is at all possible, so as more efficiently to gather relevant information and impressions from the patient's appearance, physical state, peculiarities of behavior, fears, etc. It is surprising how much more is revealed in a consultation of this kind, as compared with the history taken by a nurse with usual routine questions fired

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at the patient. Then, due to the patient's disappointment in not seeing the physician first, the mental reactions are often slower and not as accurate with this method; also, the patient often resents answering very pertinent questions, assuming they do not apply to his case, but that they are just office routine.

*Age.* A great many glaucomatous subjects are older in appearance than in years.

*Case.* Mrs. A. No. 13800. This patient was first seen February 6, 1933. She is a Jewish woman, 44 years old but appearing to be 54. She said her previous eye physician had told her she was losing sight because she was getting older. (He had not recognized the glaucoma.) As she entered the room she cast about in a searching way, shading her eyes as she did so. The central vision was slightly reduced and to the distant correction Sph. +1.50 had to be added before one eye and Sph. +2.50 before the other for reading. The fields were greatly contracted, photometric tests showed marked reduction in central visual perception of light, and the discs were definitely cupped and atrophic. This case should have been suspected long before by the very fact she had been showing her age for many years (her husband's statement). And being suspected, the other tests should have been applied for confirmation. We always take tonometric readings when the apparent and real age do not coincide.

*Anxiety.* This is the first of all the subjective emotions in etiological importance. And it is one of the first points that a doctor notices. The inclination to worry, the anxiety neurosis, so masters the patient that it can hardly escape an observing physician. I am afraid that we do not sufficiently appreciate its importance in relation to this disease group.

We have been impressed with the large number of Jewish patients with glaucoma. I once asked a Jewish colleague why his race was so prone to nervous disorders, and especially worry. He answered that his race had been subject to persecution for so many centuries that they could not completely drop their fears in one or two generations. In Chicago we have a very large negro population, and in a large charity hospital and out-patient department we have recently been impressed by the great numbers of glaucomatous subjects in this race. It has been generally considered that negroes are rather care-free and that glaucoma among them is rare; but since the depression there has been a decided change in this respect. I wonder if your experience has been similar to this.

*Familial Tendency* to glaucoma may give patients reason for their anxiety. Such history is often given without inquiry, but we should ask the question directly if the information is not volunteered. To the literature already reported, I should like to add a note on the following case which will probably be reported in full at a later date.

*Case* 11977, Mr. W., 76 years of age, seen in 1930. Patient had a brother and a sister with non-congestive glaucoma and his father and another sister had congestive attacks. In 1927, he first noticed failure of vision. He consulted a Dr. X, of Indianapolis, who diagnosed optic atrophy, but gave no treatment. He had been seeing colors about objects. His vision was 20/40 in both eyes with correcting glasses. The tension of both eyes was 25 mm. Schiotz (old scale) which was reduced to 15 mm. and 17 mm. on the use of 1 per cent pilocarpine six times a day; and it increased to 31 on use of 2 per cent homatropine once.

His brother, C. W., 63 years old, seen in 1931, was much worse, having only light perception in one eye and fingers at five feet with the other. R. tension 58, L. 54. Marked glaucomatous cupping and atrophy.

*Fear of Glaucoma* without previous family history or reason for such fear, occasionally seizes a patient. The following case history was reported in full by Dr. Wilder at the meeting of the American Ophthalmological Society, 1930. To be brief and to confine myself to this particular point, let me give the details as follows:

Mr. Z. R. S., age 42, Case No. 19782, asked his regular eye physician in February, 1929, if he would test him for glaucoma. Dr. Blum, New Orleans, thought that the physiological cup, described the year before, might be enlarged beyond the physiological limits. Perimetric tests were normal, but tension was 40 mm. in each eye. Case went on to a typical non-congestive, but secondary glaucoma, low-grade uveitis and detachment of each retina, with complete subsidence of hypertension and

inflammatory signs of uveitis and reattachment of the retinae following treatment, including double iridencleisis.

*General Health* and recent illnesses are important. Occasionally we find a patient who has recently recovered from an attack of influenza or a debilitating disease and is depressed both mentally and physically. It may be that the physical depression increases the worry.

### Symptoms

The first eye symptoms are often difficult to obtain from the patient, or from his family because they are so apt to be common symptoms of almost any disorder, as, for instance, headache, gritty eyes, tired eyes, drawing pain about the eyes, neuralgia, etc. Let me give a recapitulation of the symptoms complained of by one patient over a period of seven years:

Mrs. N. C. K., age 60, Case No. 6246. First seen in July, 1925. Glasses were fitted under cyclopegic nine months before. With these R. and L.V. 20/20+. Normal addition for reading, Sph. +2.25 and +2.50, respectively, gave near-point of 28 cm. and 25 cm. Her complaint was "eyes sometimes hurt, the pains are indefinite, the eye muscles pull and the eyes feel gritty." There were normal form fields, slightly contracted color fields and slightly enlarged blind spots. Tension normal before homatropine, but rose to 50 mm. and 37 mm. (Schiotz) after homatropine was used once in each eye. The discs were normal.

Four months later we noted, "Occasionally eyes ache; relieved by pilocarpine. Tension 23 and 24 mm." One month later: "pain and drawing of eyes when reading." This was somewhat relieved when weaker glasses were prescribed.

In July, 1926, a year after the first visit, "At times headaches, over eyes, not in them."

In May, 1927, a period of worry was associated with rise in tension.

In November, 1927, noticed more difficulty in finding her way in dimly lighted room; fields as before.

In May, 1928, Birch-Hirschfeld photometer readings: R. $4^2$ : $10^2$ L. $4^2$ : $8^2$. Tension constantly high normal.

In January, 1931, anterior chamber began to be slightly shallow.

In November, 1931, and February, 1932, tension ranged between 31 and 44.

In November, 1932, noticed considerable difficulty seeing in a dimly lighted room.

In December, 1932, began to see halos about lights.

*Headaches* are apt to be quite indefinite; may be worse in the morning, especially after a restless or sleepless night. Difficulty in dim light and transitory attacks of blurred vision should at once put us on our guard. Frequent changes of glasses, the complaint that the glasses cannot be thoroughly cleaned, and getting up in the morning with dry, gritty eyes,—these symptoms must not be lightly dismissed. Yet, we must carefully weigh the symptoms, for in our investigation we may find the rainbow phenomena due to a mucous discharge of the conjunctiva; difficulty in dim light may be from retinitis pigmentosa; and sleeplessness does not always lead to glaucoma. For example:

Case No. 13260. Mrs. E. R. N., 72 years old. About one year ago came with history of sleeplessness, pain in the left temple and about the left eye; lights bother her, even the bright walls of her room. She reads for hours to an invalid husband. At night she says her right eyeball feels hard, especially if she awakens at 3 A. M. Here are certainly enough symptoms to suggest glaucoma. Yet on repeated tests with miotics and mydriatics, with central and peripheral fields, photometric tests and careful study of the posterior segment of the eye during the past year I have been unable to bring out the least positive evidence of even a tendency to glaucoma.

### Findings

The signs themselves are more or less objective or subject to verification by repeated tests, and can be conveniently divided into the indefinite and definite signs. With the former, I like to include certain anatomical conditions, usually considered to be predisposing. Some I shall only enumerate as they have been so thoroughly considered in the literature.

Small cornea.

Hyperopia of high degree.

Premature presbyopia, which may be present in one eye only.

Tendency to enlargement of one, or both, pupils.

Swelling of the lens in early cataract.

Evidence of previous or present uveitis.

Thrombosis of central vein of retina.

I wish to illustrate four of these points.

*Premature Presbyopia.* If this is in one eye only, it can only be found by making careful tests of the accommodation in each eye separately before using mydriatic. The first case cited in this paper illustrates this condition. Before one eye, a sphere +1.50 and before the other eye a Sph. +2.50 had to be added to the proper distant correction for reading at the proper distance. This in a woman of 44 years is unusual, and should have led the previous eye physician to a much earlier diagnosis. Another case:

Miss I. M. Case No. 12473. Forty-one years old. Patient had been operated by an osteopath in Kansas City apparently for an acute glaucoma. He produced a traumatic cataract in one eye and a glassy cystoid cicatrix with many peripheral synechiae in the other. I shall show the central and peripheral fields later. Here I wish to point out that, although she was but 41 years old, she required a +1.25 sphere added to her proper distant correction for reading. (Near-point of 30 cm.).

*Enlargement of the Pupils.* A few years ago I stopped in Heidelberg where I saw Dr. Seidel demonstrate a patient who in the dark developed a tension above 50 and when brought into the light for an hour her tension fell to below 30.

*Hypertension Associated with Swelling of the Lens.* This may be controlled by early broad-based iridectomy.

Mr. W. B. R. Case No. 8676. Fifty-nine years of age. First seen in June, 1927.

R.V. counts fingers at two feet. R. immature cataract.

L.V. 20/25 with glasses 20/20+. L. incipient cataract.

R. and L. tension 20 mm. On dilating the pupils, tension rose to R. 34, L. 28, and fell after instilling eserin. It tended to remain at the high level of normal, however, until after broad-based iridectomy. Later the cataract was extracted from the right eye without complication, but pilocarpine had to be continued in the left eye in spite of an iridectomy.

*Thrombosis of Central Vein.* This diagnosis was correctly made by a prominent eye physician in Los Angeles in the following case:

Mrs. I. M. L. Case No. 13915. Sixty years old. Iodides had been given. The vision in that eye was eccentric only; the anterior chamber was quite shallow; the pupil was 2+ mm. diameter (other eye normal and pupil 2 mm. only). The tension pulsated between 41 and 36 mm. with the 10 gr. weight (Schiotz). Five days on pilocarpine brought the tension to 17 mm. Homatropine in the fellow eye failed to affect the tension. (She had had high blood pressure (200) until her thyroid was removed two years ago. Blood pressure now 160/108. Her father died at 50 years of Bright's disease).

The definite signs are not always clearly to be differentiated from the indefinite or predisposing, because of the very nature of glaucoma as we know it. In fact, glaucoma, as maintained by many of our leaders, is not a disease entity. It is a group of sypmtoms and signs, any one or many of which may be absent: and probably no one sign alone suffices to allow us to make an unquestioned diagnosis. These signs are:

In non-congestive glaucoma—
- Optic atrophy
- Glaucomatous cupping
- Unhealthy greenish-grey disc
- Glaucomatous halo
- Arterial pulsation
- Hypertension
- Field changes—central
- Field changes—peripheral
- Photometric changes
- Shallow anterior chamber
- Dilated, vertically oval, pupil
- Peripheral synechiae
- Atrophy of iris
- Pigment dust on cornea
- Pigment dust on lens
- Posterior synechiae
- Conjunctival hyperemia
- Corneal haze
- Grey-green sheen to lens

In congestive glaucoma—
- Marked general congestion
- Marked steaminess of cornea
- Shallow anterior chamber
- Dilated pupil unless synechiae
- Grey-green sheen to lens
- Hypertension
- Loss of vision
- Neuralgic headache
- Vomiting

Here we have almost a score of signs in the non-congestive, and half as many in the con-

gestive column. The younger the disease the fewer signs we have, and the harder we must search. Finding them often brings such a thrill as finding a tear in a retina after others have given up and you yourself have repeatedly looked and searched. Having found such a tear, the doctor feels surer of himself and more confident of the outcome. So also, finding some of the signs of glaucoma gives us a feeling of confidence and certainty.

My subject presupposes a difficulty. Since there is seldom any great difficulty in recognizing the congestive varieties of glaucoma, let us confine ourselves entirely to the non-congestive varieties.

Certainly the most important sign is the optic nerve atrophy. But that is a late, not an early sign. Before the disc becomes white it is apt to undergo some changes, described as greenish-grey by some authors, and unhealthy by others.—(Fig. 53-56. Taf. XI—Jaeger Ophth. Atlas). The bend of the vessels at the disc margin may be difficult to ascertain for the beginner, but usually there is at least one vessel that shows by its course a definite bending over the edge of the disc. Associated with these signs are the halo (same Taf.) and the pulsation of the arteries. The halo is an anemia of the choroid due to pressure of the edge of the knuckle of vitreous which occupies the glaucomatous cup. This knuckle presses upon the sharp edge of the sclera and forces the blood out of the capillaries of the choroid. The choroidal pigment migrates if this anemia lasts for any length of time, still further adding to the pallor of the glaucomatous halo. The peripheral edge of the halo is *not* sharp, thus distinguishing it from a portion of the disc, and from a coloboma.

*Any Pulsation*—arterial or venous—depends on the surrounding pressure. When the pressure in the eye equals the diastolic venous pressure, pulsation of the veins may begin to be seen. As pressure is increased to the systolic venous pressure, pulsation increases, then suddenly ceases. As it is further increased to the diastolic arterial pressure, pulsation may begin to be visible in the arteries. To further increase the pressure would increase the arterial pulsation until the systolic pressure is reached when it suddenly ceases. So when arterial pulsation is mentioned as a sign of glaucoma, it means that the intraocular pressure is less than systolic and greater than diastolic arterial pressure at the optic nerve head. With normal intraocular pressure, such pulsation may be seen in almost any patient with aortic insufficiency, because the arterial diastolic pressure falls so low.

*Hypertension* of the eyeball is probably the most constant of all signs of glaucoma. This should be measured with a standard tonometer, such as the Schiotz, and not simply with the fingers, as I have seen some of our most revered professors incorrectly estimate the tension by twenty points. Not only should the effect of medication on the tension be recorded, but also the effect of rest in bed, sedatives, sweats, light, darkness, emotions. At times we hospitalize our patients in order to take the tension every few hours, day and night. Even though we may fail to raise the tension above the so-called normal, glaucoma may be present. In 1926, Drs. Beard and Brown, in the *Am. Journal of Ophthalmology*, Vol. 9, p. 47, reported such a case. On the other hand, cases have been reported in which the tension was greater than normal for years without any other sign of glaucoma becoming manifest.

*Fields.* The next most important signs, the ones so sadly neglected because of the time and patience required to educate the patient to proper cooperation, are the field changes, peripheral and central. The enlargement of the blind spot, the finding of arcuate and paracentral scotomata and the changes in the peripheral fields such as the Roenne Step (Fig. 1), and the irregularly contracted field (saw-tooth field) (Figs. 2, 3, 4, 5), can only be found by painstaking care. Colored fields should be taken in our opinion, for nearly always one can judge by the size of the color fields in relation to the form field whether the process is one of atrophy only, or of glaucoma with a secondary atrophy. This confirms other findings. In simple atrophy, the colored fields are much smaller in relation to the form fields. In glaucoma, the form fields are often indented before any appreciable contraction is noticed in the color fields. In our office, we use white for the form fields and red and green; the green is taken to confirm the red field, as they usually follow the same general pattern. In

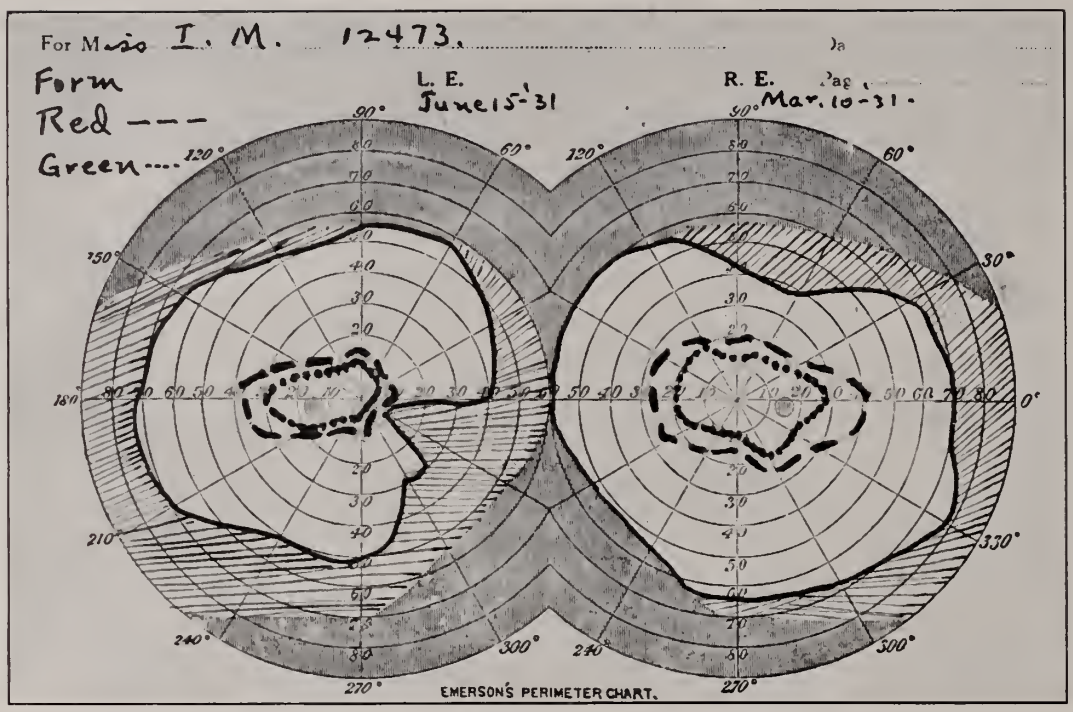
For M... I. M. 12473.
Form
Red ---
Green ....
L. E.
June 15-'31
R. E.
Mar. 10-31.
EMERSON'S PERIMETER CHART.

Fig. 1.

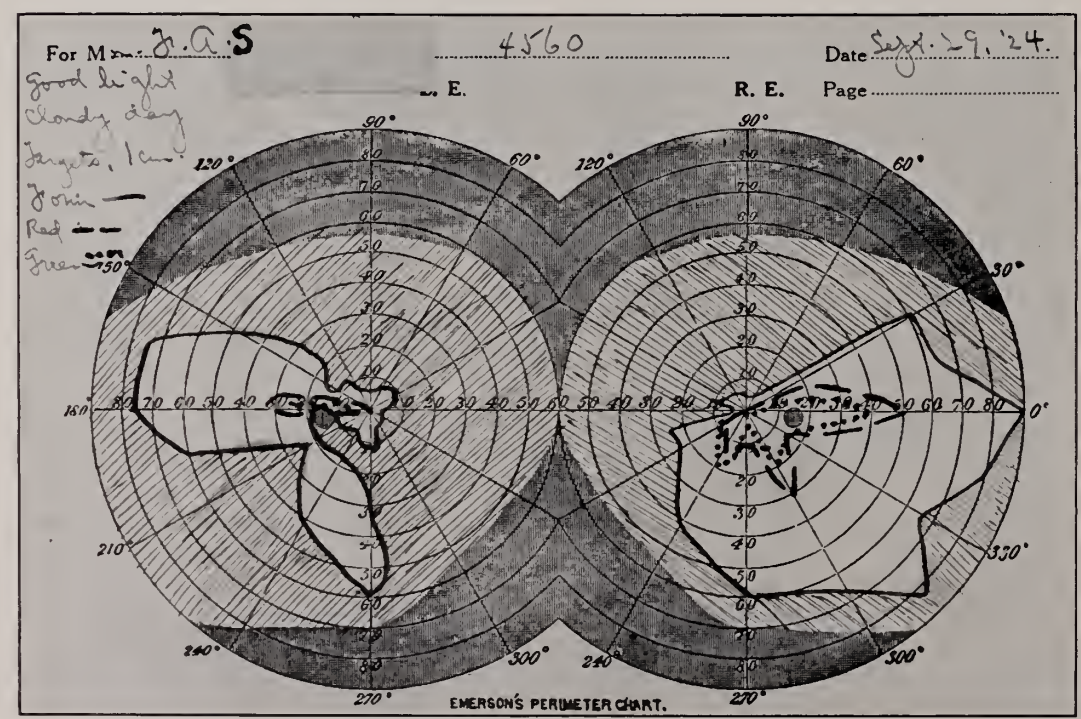
For M... J. A. S
4560
Date Sept. 29, '24.
Good light
Cloudy day
Targets, 1 cm.
R. E.
Page
EMERSON'S PERIMETER CHART.

Fig. 2.

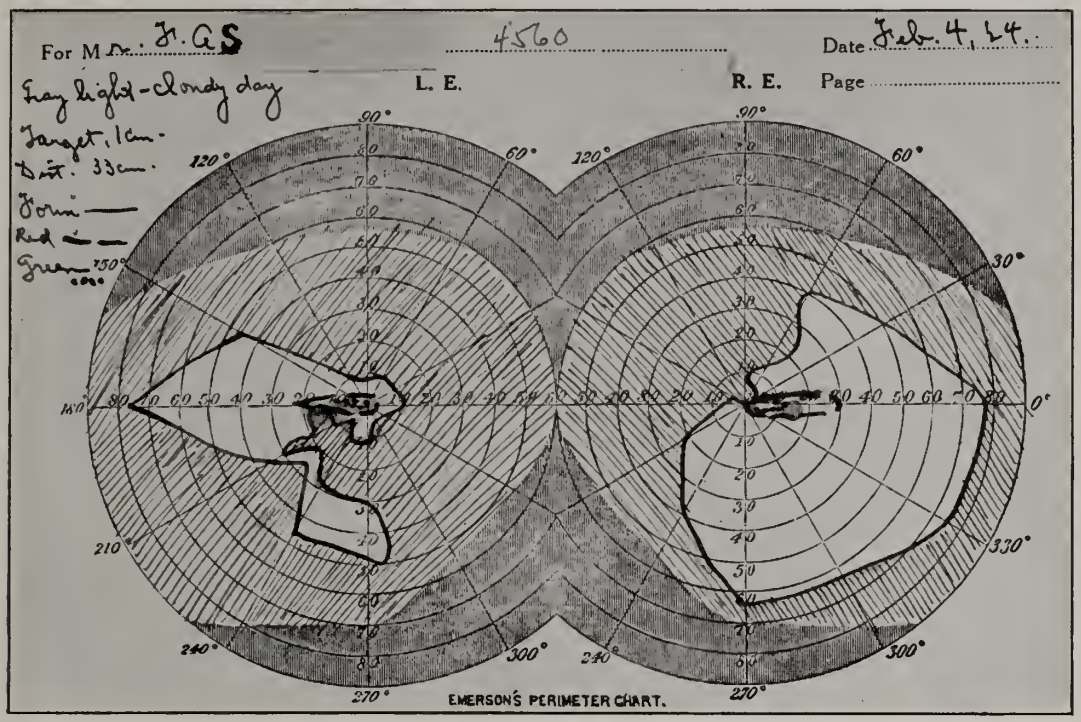
For M. J. G. S
4560
Date Feb. 4, 24.
Page
Fog light - cloudy day
Target, 1 cm.
Dist. 33 cm.
Form
Red
Green
L. E.
R. E.
EMERSON'S PERIMETER CHART.

Fig. 3.

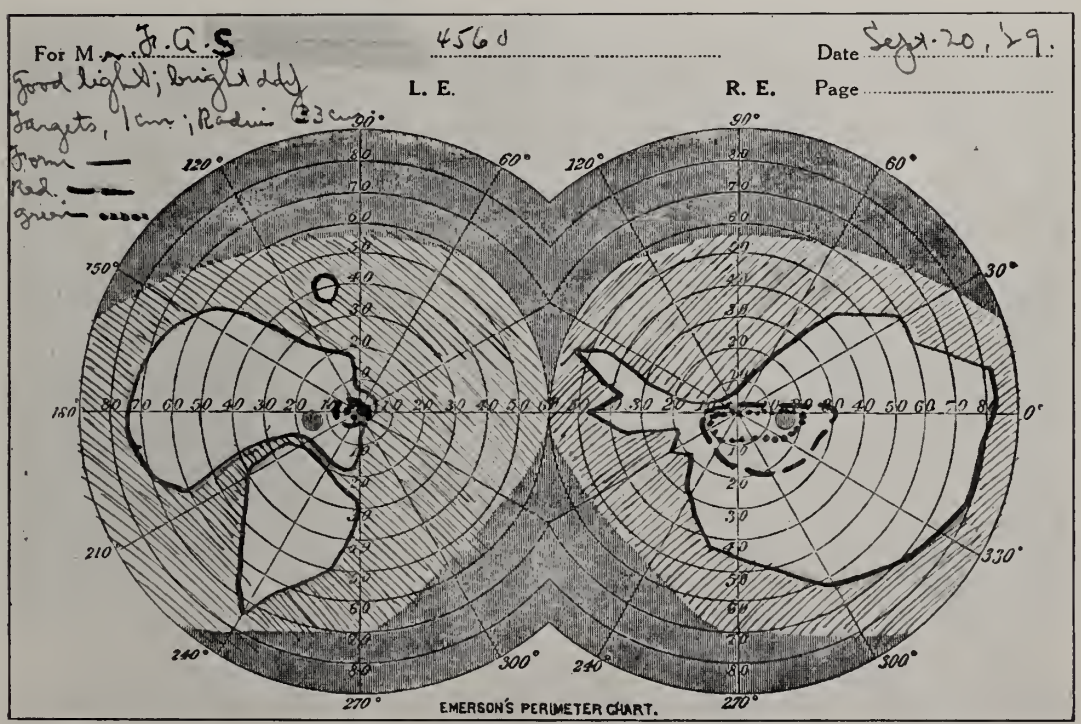
For M. J. G. S
4560
Date Sept. 20, 29.
Page
Good light; bright day
Targets, 1 cm; Radius 33 cm
Form
Red
green
L. E.
R. E.
EMERSON'S PERIMETER CHART.

Fig. 4.

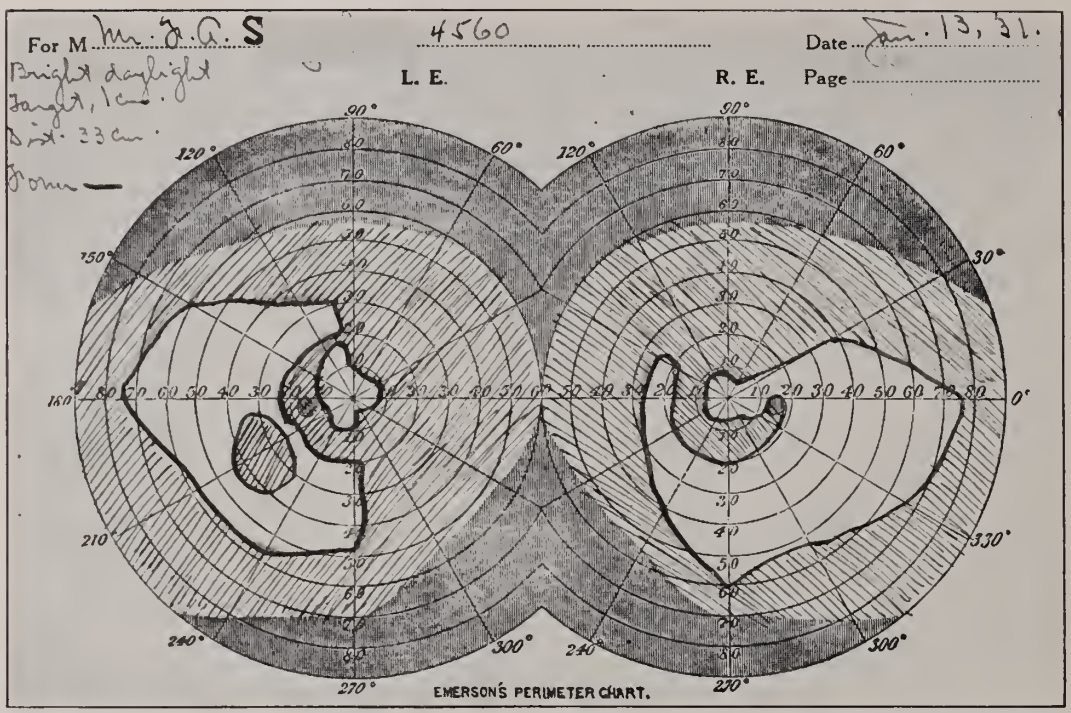


Fig. 5.

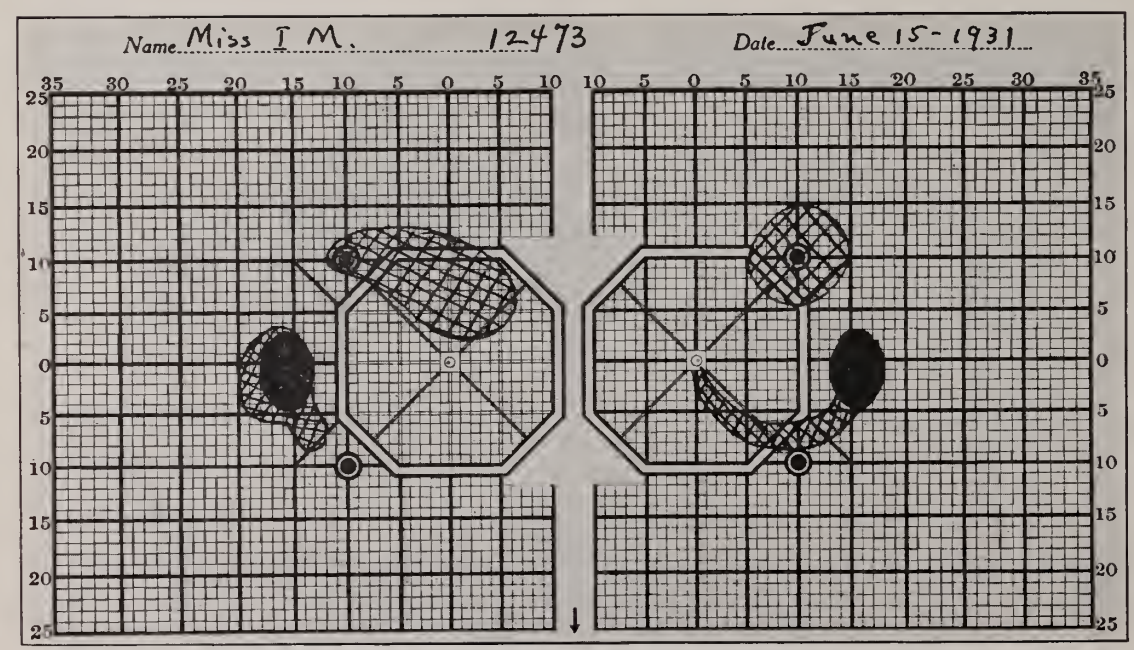


Fig. 6.

some offices and clinics form, blue and red, are used, the blue to confirm the form field.

In the fields of Miss I. M. (Fig. 6), whose history was in part quoted previously under premature presbyopia, we have in the central fields an enlargement of the blind spots, a

Seidel's scotoma and paracentral scotomata. A later stage is seen in these fields from another patient (Fig. 7).

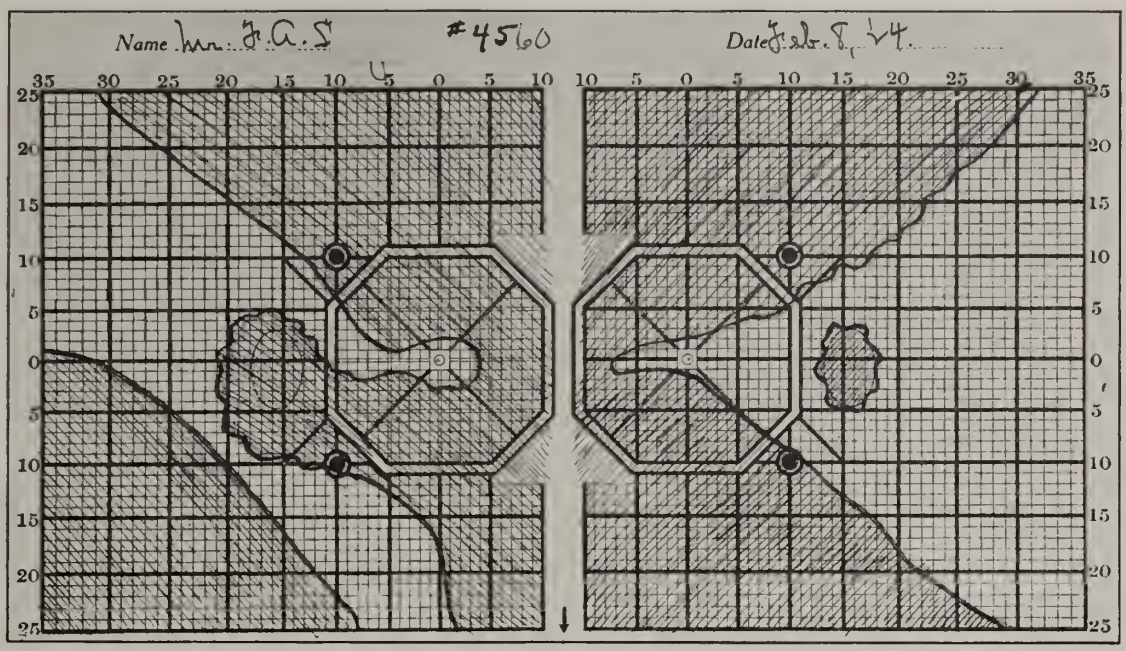


Fig. 7.

As Seidel pointed out, the arcuate scotoma extending from the blind spot toward or around the fixation point is very often seen in early glaucoma, and in almost no other condition. For this test the tangent curtain of Bjerrum is ideal. One can vary the distance to the curtain, the size of the targets and the amount of illumination to suit each case. Ferree and Rand have repeatedly pointed out the differences in fields due to differences of illumination. They have a rheostat on their perimeter which will permit the reduction of illumination to the desired point.

For some years Dr. Derby was interested in the variations in light sense in glaucoma and other diseases. The apparatus he and his associates have used is rather cumbersome. We have found of considerable help a small instrument made by Zeiss & Co. It is called the Birch-Hirschfeld Photometer No. 190. With it there is a wedge of smoked glass which can be passed before the aperture, increasing or decreasing the illumination. There is also a rheostat for similar purpose. A five point light may be made by sliding a suitable stop into place behind the wedge. After one or two minutes dark adaptation, the patient is instructed to observe the five points with good illumination. An aperture lever controlling the amount of light is then manipulated, first cutting off all light, then gradually throwing it on till the examiner (taken as normal) sees all five points of light. It is continued till the patient also sees the same. The difference is recorded as the square of the diameter for the normal is to the square of the diameter for the patient. Nearly all glaucomatous patients early in the disorder show a reduction in the ability to distinguish dim points of light.

Case 13635. Mrs. F. Forty-nine years. Almost normal central vision with and without correction. Addition +1.50 to R. and +0.50 to L. At first visit, R. 30, L. 20 mm. Schiotz. Two hours, thirty minutes after euphthalmin 1 per cent, one drop in each eye, R. 65, L. 34. Photometric tests R. $8^2 : 14^2$, L $8^2 : 14^2$. Fields slightly reduced.

Probably one of the first objective signs we usually notice in a glaucomatous patient is the tendency to shallowness of the anterior chamber and, associated with this, or sometimes without it, the semi-dilated and often vertically oval pupil. (To appreciate the former, binocular vision in the examiner is necessary.) Often associated with one or both of these will be an atrophy of the iris with or without ectropion uveae. With the slit-lamp, using a very fine slit, one can usually rather quickly observe

whether the iris angle is wide or shallow. Peripheral synechiae cannot be as accurately determined as with the gonioscope; but with this instrument one should use a contact glass, and as it is difficult for the busy practitioner to accustom himself to its use, this method of examination has been neglected. With a very narrow beam in the slit-lamp and high magnification, however, a very satisfactory examination of the periphery of the chamber may be made. At the same time a study of the corneal endothelium, the stroma of the iris, the capsule, cortex and nucleus of the lens, etc., may be made. Evidence of previous inflammation is often found.

In case the slit-lamp is not handy, as, for instance, when you are seeing a bed-ridden patient, a very practical substitute for the slit-lamp may be made by taking your +13.00 magnifier in one hand and throwing the light from a single globe ten to fifteen feet away upon the cornea. Then with a Coddington hand magnifier you will be able to pick up a great many fine details. (B & L have a small hand slit-lamp which is very useful and inexpensive.)

Occasionally the lens is found to be grey-green. More frequently there is a faint corneal haze and on slight manipulation of the eye, as in taking tactile tension, the eye flushes. This flush may be conjunctival, or it may be ciliary, or both.

I hope I have not wearied you with a recital of too many well-known details. My plea is to spend time and care and thought on each case, and, where any one of these signs exist, examine for all so you may make your diagnosis early and start the treatment before permanent damage to the nerve-head has occurred.

122 *South Michigan Boulevard.*

## THE PSYCHOLOGICAL APPROACH TO ACNE.

T. W. MURRELL, M. D., Richmond, Va.

Some time ago this idea came to me: Every doctor has a number of patients who think he is a superman: believe in him implicitly and follow him blindly. He also has another class of patients who are dissatisfied with his services, lose faith in him and seek aid elsewhere. These last people constitute unhappiness in the practice of medicine, and the thought which came to me was to go through my files and find out in what conditions or diseases I am reaping unhappiness, and maybe to attempt correction through myself. The survey showed four conditions, which constitute the great majority of all unsatisfactory psychological situations. In their order, they are *acne, falling hair, skin cancer, psoriasis.*

A candid review of these cases has been helpful. With psoriasis, there is such an abysmal gulf of professional ignorance as to make me feel relatively satisfied with my own efforts. The same is true of falling hair, but this survey has made me more cautious in prognosis and perhaps more fair to my patients.

In skin cancer, it changed my technique as to the rigorousness of the first treatment.

In acne, however, which was my greatest cause of stress, I had no change to make in my technique or ideas. Here, I seemed to be up against conflicting ideas,—a layman's psychology, and, moreover, a general medical psychology which seemed to be in conflict with my own. This, in explanation of the title, "The Psychological Approach to Acne."

The average person judges the seriousness of a disease on three counts: Does it kill? Does it cripple? Does it pain? These are considered serious affairs and justify serious remedies. So when afflicted with a trouble that does none of these things, they feel it to be a simple little disease and naturally it should answer to some simple therapy or hygienic direction. It is further demanded that such treatment shall act quickly and be of slight expense.

So the patient with acne, particularly if not educated, starts on a search for such a remedy. Advertisements are searched, cosmetic counters and drug clerks are consulted, and formulas are obtained from the beauty columns of the Woman's Page of the daily papers. The failure of the formula or prescription to act does not dull the belief there is such a thing somewhere if the searcher can only find it, and the hunt goes on. When discouragement comes, they turn to the physician, but, be it noted, with the self-same hope. He is expected to succeed when they have failed but in the same manner. So much for the adolescent. The heads of the family have different ideas. With the boy, he does not keep his face clean; with the girl, the menstrual function is indicted. In both, it is supposed to be due to suppressed sexual activity, to eating of fats, and, finally, the old man thinks, what's the use of spending money; they will outgrow it.

This last is a cruel teaching. Heaven only knows how many psychoses and inferiority complexes have arisen from this, and it always bears hardest on boys, who are supposed not to mind. The mental status of the average boy is a much maltreated thing. He is supposed to be a little rough neck and always debonair, when, as a matter of fact, he is just as emotional as his sister. One should be very gentle with these lads. A situation which may be merely a bother to an adult, may be a cataclysmal chaos to an adolescent. I use such hyperbolic words because that is the way to express adolescent thought. To let an adolescent go through life's most vivid period, blemished and unsightly, is a shameful thing. It would be bad enough even if acne did not scar and do a permanent damage. Lastly, they fall back on "'poison in the blood," whatever that means, but this is what usually brings them to the doctor's office,—to an honest upright physician.

Modern science is now evoked and the case is approached as one of internal medicine, and in nine cases out of ten the search is started for focal infection, which seems logical to the "poison in the blood" obsessed parents. Allergy is considered and, since most people are defective somewhere, tonsils go, teeth are drawn, appendices removed, cervices treated and uteri straightened. There is no attempt at sarcasm here. The things that were done, should have been done, and the patient is better because they were done, but the acne remains. What harm there is in it, was leading the patient to believe these steps would cure the acne. Frequently enough there is a great improvement but not a cure. This is because these things are secondary causes in acne. Being present, they make an acne worse, but they did not produce acne in the beginning and their correction cannot be expected to cure it.

The attempt to make acne a health problem leads to frequent absurdity. One may go to any tuberculosis sanatarium and find there an adolescent suspended by rest between life and death with no sign of acne upon them. Now switch the scene to any "prep" school in the fall, and on the football squad we will find some young animal, at the absolute apex of physical well being, whose face none the less is a mass of ugly pimples. This last has been explained as an individual lack of resistance and the call put out for vaccines, which have proved a dismal failure.

Both of these people, the patient and doctor, have approached the case psychologically in a way that produces failure. Is there any other way? A short review of the pathology should help.

To begin with, the beginning of acne is physiological and not pathological. When the body becomes stimulated by the endocrine flood of pubescence, the sebaceous glands become hyperactive and pour out increased quantities of sebum. In other words, there is a true seborrhoea. Either due to an irritation produced from over action or from an unknown infection, there now occurs a plugging of the glands at its mouth by the comedo. This converts the gland into a cyst filled with sebum, and, because it is originally an open cavity, there is the usual amount of staphylococcus implantation. Now, up to this time, everything which has occurred is localized in the skin and has no connection with other diseases. There is an unknown here, and, when it is found, we may know the answer to many other things, such as dandruff and seborrhoeic dermatitis.

However, the stage is set, the culture media formed, and germs implanted. Now let some devitalizing situation occur and the sebaceous material of the sac breaks down into pus and the cycle of pus formation, destruction of the gland, evacuation, cicatrization and pitting is completed.

This shows that it is right to correct the secondary causes which lead to pus formation, and at the same time the futility of expecting such treatment to affect the first stage.

The thing is like the house which Jack built, and if we can only break up one step the rest cannot follow. The first step is the seborrhoea and only two things seem to affect this, X-ray and sulphur. Other things are used because of partial effects, mainly germicides, but, in the present light of knowledge, X-ray and sulphur constitute the specific treatment of acne.

Now, with thanks be it said, there are parents, who take the matter seriously and give *carte blanche*. With these cases, and no time limit, success is obtained. The physicians work together and, in addition to specific treatment, secondary causes are combated and the surgeon called on if he be needed. Natu-

rally, this takes time and may well mean a large professional fee, approximately the same as that of a severe illness.

This is naturally a severe jolt to the little shop-girl with $5.00 in her pocket in search of a magic formula. It seems to be a severe jolt to her father, who feels she will outgrow it, and bears his daughter's sufferings with wonderful equaminity; and with the immigrant father, Syrian, Italian or Russian, such talk brings an expression only too revealing of his opinion that he has fallen among thieves. And who can blame him, when all laymen think it a simple disease!

With the physician, it is a pity that, doing so much, more is not done. The problem is certainly serious enough to demand a fuller use of what we do know, when admitting so much, which is unknown. Clear thinking is the logical pre-requisite to clear therapy.

17 *East Grace Street.*

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## ACUTE POST-OPERATIVE GASTRIC DILATATION TREATED WITH INSULIN—WITH A CASE REPORT.*

WILLIAM J. MALLORY, A. M., M. D., Washington, D. C.

Acute gastric dilatation is a condition in which the stomach rapidly loses its muscle tone and motor function, becomes filled with a greenish or slate colored fluid, and frequently, repeatedly refills after evacuation.

General symptoms, such as circulatory failure and collapse, sooner or later accompany the condition.

A specific cause is not known. The condition develops from the third day to the third week after a major operation, and is more common after operations on the kidney, gall-bladder, and pelvic organs, than it is after operations directly upon the gastro-intestinal tract. Acute dilatation of the stomach also occurs in association with injuries to the spine and head.

In some instances there is formed at operation or post-mortem, evidences of pinching of the third portion of the duodenum by the root of the mesentery. Some consider this primary and the dilatation secondary, while others believe that there is primarily a rapid loss of gastric tonus followed by distention, sagging and acute angulation of the duodenum.

A condition has been found in which there was a long mesentery, the small bowel relatively collapsed and hanging over the brim of the pelvis, thus exerting traction, angulation, and pinching about the duodenum.

The onset is usually described as sudden, the patient passing within a few hours from a satisfactory condition into an alarming state of distention, nausea, vomiting, and collapse of the circulatory system.

In some instances there may be noticed a progression of symptoms from abdominal discomfort, hiccough, belching, complaint of pressure about the ribs, increase in rate of pulse and respiration, decline in blood pressure, impairment of color of face, distressed anxious expressions, revulsion to food, and great thirst. A leucocytosis may be present, suggesting a complication in the surgical field.

Vomiting occurs, and the amount of fluid ejected may be larger, or, in other instances, small but repeated, the patient regurgitating every few minutes a few ounces of fluid.

The vomitus consists essentially of a greenish or slate colored fluid, but is not stercoraceous in character and does not contain duodenal contents except a small amount of bile. If the patient has received food since the operation, this is soon expelled, but the vomiting of fluid continues when all food by mouth is omitted or discontinued. Indeed, it is a characteristic feature of the condition that if the stomach is evacuated by vomiting, or aspiration with the stomach tube, it refills within a few hours with the same kind of fluid. Thirst and nausea are the most distressing symptoms.

Physical examination reveals the abdomen distended, especially in the epigastrium. Visible peristalsis is not present. Repeated blood pressure readings usually show decreasing figures.

Laboratory examinations, when made, may show some of the evidences of high obstruction, namely, concentrated urine, with albumin and casts, a decreasing value of blood chlorides, rising non-protein nitrogen, and normal or high carbon dioxide containing power. A leucocytosis may be present in the absence of a surgical complication.

The diagnostic problem consists in excluding conditions requiring operation, such, for instance, as organic obstruction. The right decision is of the utmost importance, because the treatment is not surgical. Those cases which have been operated upon have promptly died. In any case the prognosis is grave. Early

*From the Medical Department of George Washington University School of Medicine.

diagnosis and prompt treatment are favorable factors. Prevention is the best remedy of all.

The well-known principles of treatment are sometimes not practiced with sufficient promptness or persistence. The stomach should be emptied, and kept empty, preferably by the repeated use of a stomach tube, rather than a retained duodenal tube, for the reason that in some instances large particles of food may be evacuated after the second or third lavage. No food or fluid should be given by mouth for twenty-four hours. Dehydration should be controlled by repeated administration of normal saline solution by hypodermoclysis. Stimulation of the heart or central nervous system may be used, but this is futile, unless the above two measures are applied with energy.

With the exception of the two measures of keeping the stomach empty, and combating dehydration, therapy of this condition has been empirical. The effect of strychnine, digitalis, and pituitrin, if any, has not been very apparent, though possibly of some assistance. The effect of spinal anesthesia, first described in post-operative ileus by Chenut[1] and since then often used with benefit in that condition, has not been observed in acute gastric dilatations.

Since the beginning of the use of insulin it has been known that a full dose would provoke hunger sensations, and long ago Carlson[2] demonstrated that the sensation of hunger was associated with increased gastric tonus and motility. Butalao and Carlson[3] first showed that insulin augmented gastric motility, and dextrose injections abolished it. La Barre[4] showed that action was through the vagus nerves, by demonstrating in cross circulation experiments that when the hypoglycemic blood of one animal was passed through the cerebrum of a second, gastric function was augmented in the second animal even though all connection with the cerebrum was severed except the vagus nerves. Further evidence that the effect is mediated through the vagus nerves is manifested by its prompt abolition on the injection of atropine.

### Report of Case

A man, 53 years of age, had a cholecystectomy performed October 20, 1932. At the operation the surgeon examined the abdominal organs, including the stomach and duodenum, with special care, and no abnormality was found. The patient was discharged seventeen days later after an uncomplicated post-operative period. November 14th, he developed nausea and vomiting of all food and fluid. There was no pain of any kind and the bowels were regular without laxatives or enemas.

The temperature was 98, the pulse 95, the respiration 20, and the blood pressure 118/75. The only abnormality to be found on physical examination was moderate distention of the abdomen with gas. The patient was pale, mentally dull, and complained of nausea and belching.

Laboratory Examinations: The leucocyte count was 13,800. The blood sugar was 100 mgms. per 100 c.c. Non-protein nitrogen was 26. Tentative diagnosis was post-operative paralytic gastric dilatation, with a mental reservation concerning obstruction.

Treatment consisted of gastric lavage, with the removal of a large amount of greenish liquid. Liquid diet, simple enema, and rectal medication were given, the latter consisting of veronal grs. 5, with extract of belladonna, grs. ¼, every six hours. The vomiting recurred, and the next day, November 18th, the patient was examined before the fluoroscope without a barium meal and the stomach found to be filled within half an inch of the dome at the fundus. The stomach was again aspirated and 1,200 c.c. of fluid removed with fragments of prunes eaten six days previously. Further treatment consisted of normal saline solution by hypodermoclysis repeatedly.

On November 19th, feeding was resumed by mouth; no further vomiting. November 22nd, discharged.

November 26th, vomiting recurred. At the office fluoroscopic examination without contrast meal showed stomach completely filled with fluid within about half an inch of fundus. Fifteen hundred c.c. of greenish fluid evacuated and barium meal was then given. The stomach was normal in size, position, and contour. Peristalsis was very slight, and no barium could be forced through the pylorus by manipulation.

At the six hour period, about 50 per cent of the meal was still in the stomach, the remainder being in the small bowel and first part of the colon. At the twenty-four hour period the stomach was empty and the colon filled in the normal manner.

The patient returned to the office on the

morning of November 27th. Twelve hundred c.c. of fluid was aspirated despite the fact that the patient had vomited five times during the night.

The patient was readmitted to the hospital.

Physical findings were the same as on previous examinations.

Laboratory Examination: Blood chemistry, non-protein nitrogen was 36. Carbon dioxide combining power was 67. The urine contained albumin, hyalin casts, but no sugar.

Normal saline solution, 500 c.c., with 5 per cent dextrose, was given intravenously, with 10 units of insulin. Nothing whatever was given by mouth.

November 28th, orange juice, 200 c.c., by mouth and insulin, 5 units, was given four times a day.

On November 29th, diet was gradually increased by the addition of meat, bread, and vegetables, with orange juice, 200 c.c., between meals. Insulin, 5 units, was given after each meal and after intermediate feeding of the orange juice. No further vomiting occurred. Patient discharged December 3rd, and has been well to date, February 1, 1932.

Complete repeated evacuation of the stomach and prevention of dehydration remain essential in the treatment of acute post-operative gastric dilatation. Insulin would seem to be a valuable physiological remedy both in prevention and treatment.


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1720 *Connecticut Avenue.*

## A CONSIDERATION OF ANTERIOR POLIOMYELITIS AND POST-VACCINATION ENCEPHALITIS—WITH CASE REPORT.*

HOWARD URBACH, M. D., Richmond, Va.

Poliomyelitis may be said to be of comparatively recent origin in that the first mention of the disease was described in 1784 by Michael Underwood,[1] of London, a skilful obstetrician of his day.

Underwood's description of the disease is as follows: "It is not a common disorder anywhere and occurs less frequent in London than in other parts of the Kingdom." He admits that he does not know the cause from his own observation, or from that of others with whom he has corresponded. He feels, however, that teething or foul bowels may be the cause.

In describing the symptoms and treatment he has the following to say:

"If it arises from teething or foul bowels the usual remedies should be employed and have always been effective. But the complaint as often seems to arise from debility and usually attacks children previously reduced by fever, seldom those under one or more than four years of age. It is then a chronic complaint and not attended with any effection of the urinary bladder, nor with pain, fever, or any manifest disease; so that the first thing observed is a debility of the lower extremities which gradually becomes more infirm and after a few weeks are unable to support the body.

"When only one of the lower extremities has been affected the above means in two instances out of five entirely removed the complaint; but when both have been paralytic nothing seemed to do any good but irons to the legs for the support of the limbs and enabling the patient to walk."

In 1850 an Irish physician by the name of Henry Kennedy published an article in which he stated that he noticed that temporary paralysis was of comparatively frequent occurrence and thought that the arm was more frequently paralyzed than the leg, but that in young infants the diagnosis of paralysis of the leg was more apt to be made. He used warm baths for the pain.

During the same year a French physician by the name of Rilliet made a post-mortem examination on a child dying of this disease, and, not noticing any change in the nervous system, he called it the "essential paralysis."

The first epidemic was reported in America in 1843, by George Colmer, who had the following to say: "Paralysis in Teething Children.—While on a visit to Louisiana in the fall of 1841, my attention was called to a child about a year old, then slowly recovering from an attack of hemiplegia. The parents told

*Read before the Richmond Academy of Medicine, November 22, 1932.

me that eight or ten other cases of the same disease had occurred during the preceding three or four months within a few miles of their residence, all of which had recovered or were improving, and all of which were two years of age or under, and the cause seemed to be the same in all, namely, teething."

It seems as though all the early writers ascribe the disease to teething or to weening, except Heine who recognized that he had to deal with a disease of the spinal cord. In 1855, Duchenne called it fatty, infantile atrophic paralysis. In discussing the treatment he says. "All the cases which I have seen where the faradic contractibility was demonstrated and not lost, and which could be treated with faradic electricity, within two years after the onset have been completely recovered."

It appears as though the first lumbar puncture was done in 1890 by Schulze. He described a diplococcus, since which time numerous authors have described bacteria of one kind or another. Inoculations in rabbits were made during the same year but were not successful.

In 1909, Flexner and Lewis succeeded in transferring the disease from one monkey to another. They demonstrated the fact that the virus was filtrable and that the recovery from an attack of experimental poliomyelitis afforded protection to a second inoculation; also, that immunizing substances were discovered in the blood serum of monkeys that had recovered from the disease as produced experimentally, which later proved to be found in the human serum.

In 1910, Flexner and Lewis demonstrated that it was possible to immunize one through the administration of blood serum, either from monkeys or from recovered human beings.

The term "poliomyelitis" is derived from the Greek words "polios," meaning gray, and "myelon," meaning marrow.

The following list from Ruhräh and Mayer shows the terms that have been or are now used: Dental paralysis (Underwood); infantile spinal paralysis (Heine); paralysis during dentition (Gule); teething paralysis (Marshall Hall); morning paralysis (West); essential paralysis of children (Barthez and Rilliet); regressive paralysis (Barlow); myelitis of the anterior horns (Sequin); tephromyelitis (Charlot), from the Greek "tephros," meaning ash-gray; spodomyelitis or spodiomeylitis (Vulpian), also from the Greek "spodios," meaning ash-gray, according to Erb; acute fatty atrophic paralysis (Duchenne); myogenic paralysis (Bouchut); idiopathic paralysis; infantile paralysis; essential paralysis; acute spinal paralysis; poliomyelitis anterior acute; anterior poliomyelitis.

### Post-Vaccinal Encephalitis

*History.*—Post-vaccinal encephalitis, or post-vaccinial encephalitis, or, as Charles Armstrong,[2] Surgeon United States Public Health Service, has suggested, post-vaccination encephalitis. which he considers preferable because the complications follow vaccination but usually appear at the height of, rather than after the vaccinia, is nomenclature that is noncommittal as to the vaccinal or non-vaccinal nature of the ailment.

Fortunately post-vaccination is quite rare. The mortality rate is reported as being approximately 40 per cent. Is it possible that it occurs more frequently but is not recognized? In the United States seventy-one cases were reported during the last ten years. Armstrong[3] states that during the years 1928, 1929, 1930, forty-one cases were reported in the United States, or a rough estimate of one case for each 350,000 vaccine points sold.

Would it not be a reasonable guess to say that of all vaccine points sold 15 to 25 per cent are not actually used—due to expiration date of virus, accidental losses, and to second or third vaccinations due to "no take." If this be true, we would have a ratio of one case of post-vaccination encephalitis for approximately every 262,500 persons vaccinated.

Lucksch,[4] in 1924, was the first to call our attention to this rare condition, since which time some 600 cases have been reported in practically all foreign countries with the exception of Mexico, Canada, Australia, Central and South Americas. Cases occurring in this country bring the total to 671.

It is interesting to note that this complication most frequently occurs following the first vaccination or "take" and that it is almost entirely confined to children past three years of age, i. e., three to twelve years, although a few cases have been reported in adults, the oldest being 49 years of age.

*Etiology.*—The etiology is unknown, the symptoms occur usually from the 10th to 15th day—coincident with the "peak of the take."

In Great Britain it is thought that this com-

plication is more likely to occur following multiple insertions; consequently, it is recommended that a single small insertion (or implantation) be used.

Armstrong[2] through a series of experiments on mice has done much to solve the problem of etiology of this rare complication, working upon the hypothesis that a preliminary immunization by the injection of a non-specific antigen might increase the animal's efficiency in its reaction against a subsequent inoculation with vaccinia.

It is now a well-known fact that many patients with pertussis will be materially benefited by a successful vaccination, the symptoms ameliorating coincident with the "take."

Rosenau and Andervont attempted to verify experimentally the hypothesis that previous non-specific inoculations would render an animal's response to vaccinia more efficient. After considerable experimentation they were able to show that a strain of vaccine virus developed at the National Institute of Health was capable of producing a fatal meningo-encephalitis by introducing it in the brains of white mice.

Armstrong, following up this line of thought, confined his experiments to diphtheria toxoid, because, if efficiency was indicated experimentally, it could be utilized in children by administering diphtheria immunization first, followed by vaccination against small-pox, rather than in the reverse order, as is now the custom in many communities.

These experiments proved that there were more survivals in the toxoid immunized groups than in the other groups, and that the average treated mice tended to die later than the controls.

In 1916 the New York Poliomyelitis Commission found that among 954 poliomyelitis patients one to four years of age, the attack rate among the Schick positive was six to seven times as high among the Schick negative children.

## Conclusions

In the light of the above it would seem that the logical step would be to immunize children three years of age or over against diphtheria (using toxoid) before the use of small-pox vaccine.

In England it was found that the greatest number of post-vaccination encephalitis cases developed from those receiving the multiple insertions or implantations and measuring over one-eighth inch in diameter. It would, therefore, seem that the ideal technique would be the single insertion not over one-eighth inch in diameter, preferably on the arm.

If we are to consider the outstanding symptoms of anterior poliomyelitis, viz., sudden onset, fever (102-104), headache, nausea, vomiting, rigidity of neck and spinal column, flushing of cheeks, pallor of lips, plus neurological and laboratory findings, we see how closely related clinically they are to post-vaccination encephalitis, namely, sudden onset, beginning on the 10th to 13th day following vaccination, fever (102-104), nausea, vomiting, headache, and a stupor which may amount to a coma. The latter seems more constant than in anterior poliomyelitis. The Babinski is usually positive, with stiffness of neck, plus laboratory findings of spinal fluid.

From the above one must not lose time in the use of therapeutic measures by worrying about diagnosis. We feel that the logical conclusion would be to administer anterior poliomyelitis convalescent serum, as in either case no harm can be done.

It is to be hoped that research workers may be encouraged to continue their efforts to determine the etiology and develop a specific therapeutic agent. Perhaps that remedy may be convalescent serum of post-vaccination encephalitis.

## Suggestions for Prevention

1. Vaccinate before one year of age.
2. Those vaccinated after one year and under seven years of age should be given three doses of diphtheria toxoid at three weeks intervals before vaccinating. For older children diphtheria toxin-antitoxin may be used at weekly intervals.
3. Technique.—Use the multiple pressure method, which consists of tangential pricking of the skin with the side of a needle point through a drop of small-pox vaccine.
4. Limit the area to not more than one-eighth inch in diameter.

## Case Report

H. A. McM., age 10½ years, well developed and nourished, rather robust, has had measles, chicken pox and mumps. Was seen Friday P. M., September 11, 1931.

C. C.—Slight headache, vomiting, pain in umbilicus, constipated.

Physical Examination.—Temperature 101; otherwise negative, except nose and throat slightly congested.

Rx.—Antiseptic solution for nose and throat, and S. S. enema, followed by magnesium citrate.

September 12th.—Headache severe, patient drowsy, pupils dilated, reacted to light slowly, temperature 103, neck stiff, pain in attempting to bend. Urine—strong, acid, trace of albumin, pus two plus. R. B. C. 4,862,000, L. 14,600, Hbg. 77 per cent, polys. 76, lymphs, 22, large monos. 2. Spinal Fluid—Slight pressure—30 c.c., color clear, cell count 120 per cu. mm. Globulin and sugar 65 mg. per 100 c.c. Culture negative (by Dr. Budd). Consultation with Dr. T. D. Jones and Dr. C. L. Outland. Diagnosis of anterior poliomyelitis of the bulbar type. Babinski positive. Twenty-five c.c. of convalescent serum given in gluteal muscle and 25 c.c. intra-spinally. At this time patient was in a state of coma, remaining in this state until the 15th (three days) except at times would moan as if in pain.

On the morning of the 15th made an effort to talk but could not be understood. However, in the late afternoon could pronounce words plainly. Only evidence of paralysis thus far noticed was slight ptosis of left eye and cheek. Frequent profuse perspiration and large quantities of urine voided involuntarily.

On the 16th the patient tried to turn over unassisted but complained of "hurting all over." Slight headache this day.

September 18th.—Sighs frequently; complained of feeling tired; very restless, turning from side to side.

September 19th.—Lumbar puncture; 15 c.c. obtained; pressure normal.

Four days after serum was given cell count dropped to 110, globulin negative, direct smear negative, culture negative. Guinea pig which was inoculated on the 13th was reported negative for T. B. December 8, 1931.

September 24th.—Spinal fluid microscopically negative; culture negative.

This patient was vaccinated on the left thigh August 29, 1931, thirteen days before onset of symptoms of anterior poliomyelitis. On this day it was noticed that the scab was about twice the size of the average, with inflammatory area about the size of a quarter or fifty-cent piece. On the 14th the scab fell off, leaving a purulent area about the size of a nickel.

Inguinal glands were only slightly enlarged. Throughout the course of the disease patient frequently complained of pain at site of vaccination, also entire thigh.

During the first week of illness Dr. Outland called attention to the fact that we might have been dealing with a case of post-vaccinal encephalitis. In substantiation of this he read the following from "A Manual of the Common Contagious Diseases," by Philip Moon Stimson, A. B., M. D.:

"The symptoms usually appear suddenly, beginning on the tenth to the thirteenth day following vaccination, thus coinciding with the peak of the pustule stage. Fever about 104 degrees F., vomiting, headache and a stupor which may amount to a coma are the most constant symptoms, and there usually are such evidences of meningeal irritation as convulsions, cramps and even trismus, which may lead to confusion of the diagnosis with tetanus. The Babinski sign is usually positive, a point considered of high diagnostic significance. The spinal fluid shows little or no change from normal, except that the pressure may be slightly increased, and a cell count up to 300 has been observed. The cause of this complication is still unknown, as are also the methods of prevention. Cases in children below one year and over eight years of age are rare."

Patient discharged as cured October 12, 1931. Slight drag in pronunciation of words, which was noticed after she regained consciousness, had completely disappeared by this time.

Due to the similarity of the symptoms of the two diseases it is impossible to state definitely that we were or were not mistaken in our diagnosis. Considering the history of the vaccination with its clinical course and the recovery of the patient with coincidence of the healing of the vaccination would lead us to the conclusion that we were, in all probability, dealing with a case of post-vaccination encephalitis. However, we feel that the convalescent serum was not contra-indicated.

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## CONTACT GLASSES.*

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In recent years much interest has been taken in the use of contact glasses.

Fick, in 1887, experimenting on this problem, produced the earliest contact glass; these glasses were not ground but were of the blown type.

Muller, in 1889, described his work with blown contact glasses.

Sulzer, in 1892, had contact glasses ground by opticians in Paris and Geneva.

Some years later the articles of Stock (1912) and v. Rohr, (1912) appeared.

Following these papers many others have appeared—Erggelet, 1913, Siegrist, 1916, v. Hippel, 1919, Dohme, 1922, Deutsche, 1929, Heine, 1930, Rugg-Gunn, 1931, Rycroft, 1932, Wright, 1932.

### Description of Muller Contact Glasses

The Muller blown glasses have been manufactured continuously since 1887. The blown glass resembles an artificial eye of the shell type, and has a central transparent portion surrounded by an opaque scleral portion. These glasses are difficult to make and cannot be duplicated. It is often necessary to try fifty or more before getting the proper fit.

### Description of Zeiss Ground Glasses

Introduced in its present state in 1920, it is a ground glass and can be accurately duplicated. The glasses are thin saucer-shaped shells of optical glass, having a corneal section with a radius of curvature of from 5:11 mm., and a scleral rim that has a radius of curvature of from 11:13 mm. The corneal portion has a diameter of 12 mm., and the entire diameter is 20 mm., the scleral collar being 4 mm. in diameter. Additional refractive power can be ground on the contact glass but should not exceed + 8 D or — 8 D on account of making the contact glass too heavy. The glass weighs only one-half gram.

*Read at the annual meeting of the Virginia Society of Otolaryngology and Ophthalmology in Harrisonburg, Va., May 6, 1933.

### Fitting and Prescribing Contact Glasses

Zeiss has recently put out a special trial case containing ten test glasses, which is sufficient for most cases, although one of the more elaborate trial cases containing sixty-five to eighty-one test glasses assures a better fit in unusual cases.

The average curvature of the cornea as given by Donders, Tescherning and Gullstrand is 7.7 mm.

The new Zeiss trial case of ten contact glasses contains the following:

Radius of Curvature of the Glass Surface Next to the Eye in MM.

| | | | | | |
|---|---|---|---|---|---|
| Scleral segment | | 11.50 | Corneal segment | | 7.5 |
| " | " | 11.75 | " | " | 7.0 |
| " | " | 12.00 | " | " | 7.0 |
| " | " | 12.00 | " | " | 7.5 |
| " | " | 12.00 | " | " | 8.0 |
| " | " | 12.25 | " | " | 7.0 |
| " | " | 12.25 | " | " | 7.5 |
| " | " | 12.50 | " | " | 6 5 |
| " | " | 12.50 | " | " | 7.0 |
| " | " | 12.75 | " | " | 7.0 |

The corneal radius can be measured by any of the usual ophthalmometers of keratometers which gives the curvature in diopters. To find the radius of the curvature of the cornea, divide 337.5 by the number of diopters shown by the ophthalmometer or keratometer; for example, with an ophthalmometer measurement of forty-five diopters the radius of curvature is 7.5 mm.

To insert the contact lens it is preferable to instill a few drops of holocain or butyn; then, with the sucker, the contact lens is grasped, having the patient reclining on an operating chair or table. While an assistant holds both eyelids open, the contact lens, after having been filled with warmed physiological salt solution, is placed over the cornea. The lower lid is released. This usually leaves an air bubble between the contact lens and cornea, to remove which, an iris spatula is put under the scleral rim of the contact lens while the upper lid is held back, and an assistant drops warmed salt solution between the contact lens and the sclera. When the air bubble disappears, the spatula is removed and the upper lid released. This method is not the orthodox method, but has proven very satisfactory in my hands.

O'Rourke describes an apparatus, using a bottle with a sucker above and a pressure bulb by which a portion of the air in the bottle is exhausted.

Rycroft describes a similar apparatus, manufactured by Hamblin, of London, which is

much neater and has an adjustable mirror so the patient can more readily see the approach of the contact glass to the eyeball.

From the literature it would seem that most authors insert the contact lens by applying the sucker, filling the contact lens with warm salt solution, and then having the patient stand with head bent forward and looking towards the floor; the lids are held open, the contact lens applied over the globe, the lids released, and then the sucker is released. This does away with the air bubble but has the disadvantage of one being unable to distinctly see when the contact lens is in its proper position.

It is necessary that the corneal portion of the contact lens does not come in contact with the cornea. This is best ascertained by using a solution of fluorescein instead of salt solution, and then examining with the corneal microscope. If the cornea is not in contact with the lens, a distinct yellow band will be seen between the cornea and the posterior surface of the contact glass. Having obtained the proper corneal curve, it is now necessary to see that the scleral ring fits snugly. When properly fitted the contact lens does not move from side to side by moderate pressure applied to its edges. Furthermore, the conjunctiva will not be indented at the scleral margin.

The patient's vision is now obtained and minus or plus spheres are added until the best vision is obtained. There will be no astigmatism except in rare cases of lenticular astigmatism, as a contact lens will correct all the corneal astigmatism. The distance between the posterior surface of the sphere in the trial case and the anterior surface of the contact glass is accurately measured.

To write the prescription for the patient's contact glass, the scleral and corneal curvature of the contact glass is given with the strength of the sphere that is used to obtain the best vision; also the distance between the sphere and the contact glass is given. If the patient is a presbyopic a contact lens with a stronger curve can be prescribed, or, what seems preferable, a pair of reading glasses are given to be worn with the contact glass for all close work. The contact lens can be worn on an average of from four to eight hours. In cases where both eyes need contact lens and good vision is obtained with each eye, the patient can wear a contact lens over each eye, or, if he does not tolerate the glass well, he can wear the glass first over one eye and then over the other eye.

### Uses of the Contact Glass

Heine gives the following uses of contact glasses: Ametropia of various forms; serpigenous ulcer of cornea; progressive abscesses and other forms of keratitis, especially if the concave surface of glass is smeared with an antiseptic ointment; neuroparalytic keratitis; acne rosacea; vernal catarrh; trachoma; pemphigus, hayfever; kerato-iritis; dystrophia marginalis; lag-ophthalmus; cosmetic indication to change the color of the iris; tinted lens, umbral faintest to 25 per cent for actors, singers and others desiring cosmetic effect, darker tints 50 to 75 per cent against disturbing light, heat, cold or snow glare; protection against irritating chemical fumes; trichiasis; "protective bandage" against reinfection in corneal ulcers, as with dacryocystitis.

Ascher suggested colored contact glasses for albinoes. The scleral portion should be of opaque porcelain white, and for cosmetic purposes should have some vessels traced on it. In the corneal segment, a brown iris ring surrounds a small transparent pupil. Such a glass would correct the ametropia, as well as afford light protection.

Wright advised the use of contact glass after plastic operations.

The contact glass is most useful in irregular astigmatism and conical cornea. It not only increases the vision markedly in cases of conical cornea, but prevents progress of the disease. There are some who believe that increase of myopic astigmatism is stopped or even decreased by the use of contact glasses.

Much advocates the contact glass with umbral tint to be used daily in cases of recurrent corneal erosions and corneal herpes, and states that this procedure will effect a cure and that the treatment may be supplemented by the use of a salve between the cornea and glass. Much also suggests the use of contact glass to prevent symblepharon.

### Disadvantages of the Contact Lens

The slight difficulty of insertion, the discomfort especially in the beginning, and the fact that the glass can be worn from four to eight hours only at a time, as well as the cost, which is about $30.00 per lens, are disadvantages which are of slight importance compared to the improved vision and comfort of the patient.

### Advantages of the Contact Lens

The contact glass is invisible and therefore improves the patient's appearance. There is increased vision with absence of prismatic effect. The increase in the field of vision and the absence of cloudying of the lens in coming from the cold into a warm room, and *vice versa*, are advantages which cannot be obtained by any other known methods of correction. The contact lens also protects the eyeball against irritating atmospheres and trauma.

### Personal Experience

I have found the contact glass of advantage in examining the fundi in cases of irregular astigmatism and conical cornea; also in the case of a very thin veil-like secondary cataract in which the patient's vision was moderately decreased. Not knowing whether the reduced vision in this latter case was the result of the secondary cataract or his astigmatism, I applied a contact lens and could not improve his vision; therefore, I came to the conclusion that the reduction of vision was the result of the secondary cataract, in consequence of which I did a Ziegler needling.

The most remarkable improvement in vision was a patient with conical cornea who had vision without glasses in the right eye of 1/60, and in the left the patient could not see the 6/60 letters when one foot from the chart.

With the contact lens and a minus sphere, patient got vision—O. D. 6/15-3; O. S. 6/12.

I cannot be as enthusiastic over the contact glass for some of the other conditions that have been suggested, but am very well pleased with the results in irregular astigmatism and conical cornea.

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*Medical Arts Building.*

## TREATMENT OF CERVICAL CARCINOMA WITH SMALL AMOUNT OF RADIUM.*

H. B. IVEY, M. D., Goldsboro, N. C.

Somewhere between 80 and 90 per cent of all cancers of the uterus are of the cervix and only 10 to 20 per cent are in the body of the uterus. Next to cancer of the stomach, the uterus is the organ most often involved in cancer.

Most surgeons and gynecologists are now agreed that once a definite diagnosis of uterine cervical cancer has been made, the case is one for radiation treatment, unless it is in the very early stages. Then either radium or surgery may be used. The comparative value of these procedures is illustrated by the following data taken from the *Bulletin of The American Society for the Control of Cancer*—

Five-Year Cures in Early Favorable Cases
(*Disease Limited to Cervix*)
Surgery 48% (Massachusetts General)
Radium 75% (Massachusetts General)

Five-Year Cures in all Operable Cases
Surgery 36% (Massachusetts General)
Radium 66% (Massachusetts General)

Five-Year Cures in all Cases
Surgery 20-22% (Healy, 1931)
Radium 20% (Memorial Hospital)

I shall attempt in brief to give an outline of the management of these cases as followed by us:

The examination of the patient should be a careful one to determine the extent of the local disease. The uterus should be examined for

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Rocky Mount, N. C., December 6-8, 1932.

patency of the uterine canal and a biopsy of the lesion made if possible. The general condition of the patient is determined to ascertain that there is no allied condition which would prevent radiation treatment.

We attempt a classification of our patients according to a modification of the grouping plan of Drs. S. W. Budd and L. W. Peple, of the McGuire Clinic, and according to the grouping plan used by Schmitz. This classification is based upon the local physical findings.

We divide the cases into four groups or classes:

Class One. These are the lesions confined strictly to the cervix and do not exceed 1 cm. in diameter. The uterus must be freely movable and patient evidence no pain upon manipulation.

Class Two. This includes the cases in which there is a peripheral invasion of the cervix, with congested paracervical tissue, and decreased mobility of the uterus.

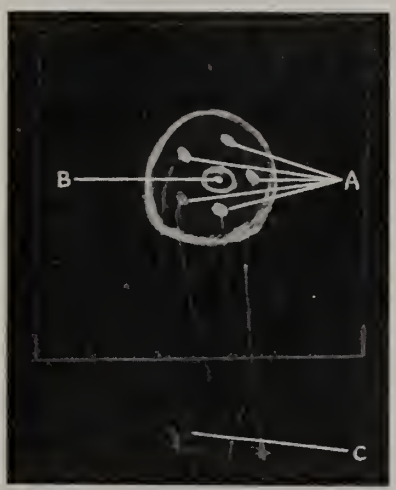


Fig. 1.
a. Radium needles implanted in cervical tissue.
b. Cervical canal.
c. Silk thread to which needles are attached.

Class Three. This consists of the cases in which the parametria on one or both sides is involved, but the structures, even though they have lost their elasticity, are movable as a mass.

Class Four. Cases falling in this class are the ones characterized by absolute fixation of the tissue. The local extent of the disease is wide. There may be metastasis to distant organs.

The treatment of cancer of the cervix with radium is essentially a hospital procedure. The patient should be placed in the hospital and examined to see that there is no contraindication present. The contraindications consist of the following: Sugar in urine, red blood cells below 3,000,000 or hemoglobin below 40 per cent, vesicovaginal fistula, rectovaginal fistula, and acute inflammatory lesions of pelvis.

In the treatment of cervical cancer, if there is secondary infection in the lesion, it should be treated by douches and local applications and cleared up as far as possible before radiation treatment is instituted. Any cauliflower or ulcerating masses should be removed by actual cautery or electro-coagulation. In cases falling in classes three and four, supplementary X-ray treatment should be given before the application of radium.

The amount of radium used by most men in this section is 50 mgs. in needles that may be used in the tissue or in a capsule. We take the five 10 mg. needles threaded, and after giving the cervix the usual surgical preparation, insert the needles in the cervical tissue at even distances around the cervical canal. The vagina is then packed, pushing the uterus as high as possible in the pelvis. The needles are allowed to remain in place sufficiently long to give 600 mg. hours radiation. They are then removed, placed in capsule, the uterine canal opened by dilatation and the capsule placed just above the internal os. It is allowed to stay sufficiently long to give 1,200 mg. hours radiation.

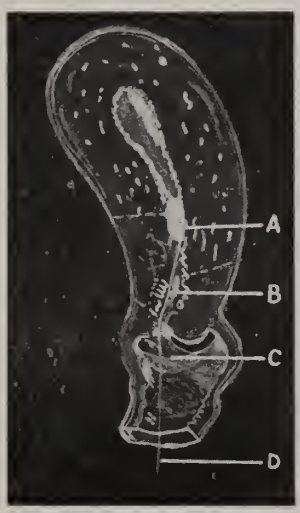


Fig. 2.
a. Radium capsule.
b. Lesion.
c. Vaginal vault.
d. Silk thread to which radium capsule is attached.

In conclusion, there are several important facts to be kept in mind when dealing with cancer of the cervix.

(a) The general condition of the patient, to ascertain if there are contraindications to this method of treatment.

(b) All cases if possible should be classed according to physical findings and pathological findings, in order to determine if there should be any variation from the standard amount of radiation, and to be able to give more accurate prognosis.

(c) Any patient presenting herself to the doctor complaining with symptoms referable to the genital tract, should have a vaginal examination by palpation and inspection of the cervix. In cases in which the nature or character of the lesion is doubtful, a biopsy should be made. In order that these cases may come for early treatment, this is of paramount importance, as time is the greatest aid to saving the life of these patients.

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## POLYCYSTIC KIDNEY: CASE REPORT.

L. M. MASON, M. D., Washington, D. C.

I want to put on record the following case of polycystic kidney, the diagnosis of some form of a kidney tumor being made prior to operation, and the pathology found consisting of a very much enlarged left kidney studded with numerous cysts.

E. J. Y., married, male, white, 26 years of age, was referred December 15, 1927, by Dr. Castell, because of some red blood cells having been found in routine urinalysis, while under his care for "stomach trouble." Careful questioning elicited no urinary symptom, but regurgitation with vomiting of food fifteen to twenty minutes after supper, with some regurgitation also after breakfast and lunch, without vomiting. Symptoms have been much worse in past three weeks, but he has not been well for three years, having seen numerous physicians. Although venereal disease was denied there was a low grade infection of the prostate, and he was under treatment for the latter condition when he began having pain in left kidney region, requiring opiates. He was finally admitted to Garfield Hospital on January 2, 1928, for study of left side urinary tract. Cystoscopy was entirely negative for pathology but the left pyelograms showed a pelvis much elongated longitudinally with same flattening of the upper calix. The pyelogram was repeated, demonstrating the same thing, with slightly better filling. Operation was advised with nephrectomy if necessary. His non-protein nitrogen at this time was 42 mgs. per 100 c.c. blood, and the urine showed 10 mg. albumin per 100 c.c., an occasional cast and red blood cell. After phenolphthalein injection, the right kidney returned 15 per cent in fifteen minutes. The urine was negative on culture.

A pyelogram of case.

Another urologist saw this patient in consultation and felt that operation was advisable. On operation on January 11, 1928, an enormous kidney about twice the usual size, whose outer surface was thickly studded with cysts, was found. Dr. Lindsay, of the Pathological Department, was asked to see the tumor and concurred in the belief that it was a polycystic kidney, and, that as these are generally bilateral and congenital, the kidney should not be removed. The wound was closed in layers

and convalescence uneventful, the patient went home in an ambulance on the tenth day.

Subsequently, frequent observations have been made on this patient, the latest one on January 10, 1933, at which time he weighed 142 lbs., looked and felt as well as at anytime since the operation. He is a clerk in the Veterans' Bureau, and has not been confined to bed in the past five years, except for approximately two weeks in March, 1932, when under the care of another physician, at which time it was suspected that he had typhoid fever, but laboratory studies proved this incorrect. In July, 1929, under local anesthesia he had a bilateral hernia repaired by Dr. Sanderson, at Providence Hospital, with uneventful convalescence. Two clinical symptoms feature the observations made subsequently to operation five years ago; there is a fluctuating blood pressure, ranging from 125 to 145 systolic, and 80 to 110 diastolic; and the constant findings of albumin and casts. He has been advised how to live, and eat, and, generally speaking, follows closely to the schedule.

### Outstanding Characteristics

The true cause of this condition is unknown, and the theories are as follows: Virchow at first thought the cysts due to retention resulting from a closure of the papillary ducts by deposits of uric acid and calcium salts, but later he modified this view believing that the closure was due to an inflammation of the papillae (nephropapillitis). These views have now been completely abandoned. Another theory advance by Bridigi and Severi noted epithelial proliferations or sprouts from the tubules of the kidney into the connective tissue surrounding them, epithelial nests, which they thought became converted into cysts through degenerative changes. The most generally accepted theory today is that of Hildebrandt, who based his conclusions upon our present-day conception of the dualistic formation of the uriniferous tubules. He believes the cyst formation is due to a failure of the union between the collecting tubule and the metanephrogenic anlage; with the beginning of secretory activity of the glomerulus and kidney tubule, a cyst is formed. Others have confirmed this theory. The frequency of polycystic kidney is given by Naumann who found 16 in 10,177 autopsies, and 14 of these bilateral. They occur at any age but more cases are found in the decade from 40 to 49 years. A marked hereditary tendency has always been noted. Outstanding clinical symptoms are pain, hematuria, and albuminuria, and a most important aid in the diagnosis is the pyelogram, which characteristically shows elongation of the pelvis longitudinally. The treatment of polycystic kidney is generally a medical problem, but the question of operative interference must be considered. Rovsing has championed the puncture of the cysts surgically.

1835 *Eye Street, Northwest.*

## CASE OF INTRAOCULAR MALIGNANT GROWTH.*

H. S. HEDGES, M. D., Charlottesville, Va.

Virginia Anderson, three years of age, was brought to us on September 20, 1932, with diagnosis of intraocular malignant growth. A definite past history could not be gotten from the parties who brought the child.

The eye was deeply injected, the cornea slightly steamy, the anterior chamber shallow, iris moderately dilated. The fundus could be seen but dimly on account of the hazy cornea. Tension was high to the touch, but was not taken instrumentally. With the ophthalmoscope there seemed to be a glistening white mass projecting well forward into the vitreous, but no clear image could be gotten because of the corneal haze. The eye was entirely blind. We thought it was almost certainly a secondary glaucoma from an intraocular growth, so the globe was enucleated that afternoon. We realized, of course, that there was a possibility that the glaucoma was secondary to inflammatory troubles, so at the operation we inserted a ball in Tenon's capsule, thinking that if the eye showed no malignant growth, we would be glad to have it, but intending to remove it if the section showed malignancy.

The child made an uneventful recovery, the section showing secondary glaucoma following chronic plastic uveitis with complete detachment of the retina. It was this which we had mistaken for a glioma. The section shows the umbrella-like detachment of the retina. The cornea was edematous, its epithelioma considerably desquamated, and there was considerable round cell infiltration with plastic exudate about the ciliary bodies. One of the Schemm's canals was completely occluded.

104 *East Market Street.*

*Reported at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, at Harrisonburg, Va., May 6, 1933.

# Proceedings
# Medical Society of Virginia

## MINUTES OF THE SIXTY-FOURTH ANNUAL SESSION OF THE MEDICAL SOCIETY OF VIRGINIA

Lynchburg, Virginia, October 24, 25, and 26, 1933

### GENERAL SESSIONS

#### Tuesday Evening, October 24

The Medical Society of Virginia convened in the ball room of the Virginian Hotel, Lynchburg, on Tuesday, October 24, 1933, for the opening session of its sixty-fourth annual convention, and was called to order at 8:30 P. M., by Dr. D. P. Scott, of Lynchburg, Chairman of the Committee on Arrangements.

The invocation was said by Msgr. Edward M. Tearney, Pastor of the Holy Cross Catholic Church, Lynchburg.

Chairman Scott presented the President, Dr. James Carroll Flippin, of University, who then read his President's address, entitled "Medical Education and Medical Practice."

While the audience stood, Dr. Isaac Pierce, Tazewell, of the Membership Committee, read the names of the forty-four members of the Society who had died within the last year.

#### List of Members of the Society Whose Deaths Have Been Reported Since the 1932 Meeting

Dr. Smelt Winston Dickinson, Marion, Va., October 29, 1932.
Dr. William Joseph Harrell, Norfolk, Va., October 31, 1932.
Dr. Wallace Bennett Cannon, Hampton, Va., September 18, 1932.
Dr. John Hack Ayres, Accomac, Va., December 8, 1932.
Dr. George Keesee Vanderslice, Phoebus, Va., December 19, 1932.
Dr. Walter Merritt Seward, Triplett, Va., December 20, 1932.
Dr. George C. Callaway, Norwood, Va., date unknown.
Dr. Kirkland Ruffin, Norfolk, Va., December 25, 1932.
Dr. James Henry Culpeper, Norfolk, Va., December 25, 1932.
Dr. Carter Weisiger, Cumberland, Va., December 30, 1932.
Dr. Martin L. Dalton, Montvale, Va., January 2, 1933.
Dr. Charles Mason Smith, Fredericksburg, Va., January 2, 1933.
Dr. Richard Huckstep Holt, Middleburg, Va., January 2, 1933.
Dr. Henry Clay Beckett, Chase City, Va., January 11, 1933.
Dr. Joseph D. Rogers, Washington, D. C., January 12, 1933.
Dr. Armistead Landon Wellford, Richmond, Va., February 1, 1933.
Dr. Adam Tyree Finch, Chase City, Va., February 22, 1933.
Dr. William A. Vaughan, Timberville, Va., March 1, 1933.
Dr. George Wythe Tompkins, Coeburn, Va., February 27, 1933.
Dr. Martin D. Delaney, Alexandria, Va., February 10, 1933.
Dr. James McTeer Miller, Wytheville, Va., March 12, 1933.
Dr. John Hansford Thomas, Greenville, Va., February 1, 1933.
Dr. Frederick Hutchison, Aldie, Va., February 20, 1933.
Dr. Charles Lawrence Bradshaw, Crownsville, Md., February 22, 1933.
Dr. George W. McAllister, Hampton, Va., March 30, 1933.
Dr. Nathaniel Albert Nicholson, Back Bay, Va., April 3, 1933.
Dr. B. Arthur Middleton, Emmerton, Va., April 3, 1933.
Dr. Louis A. Thompson, Hampton, Va., April 14, 1933.
Dr. Maury B. Linkous, Blacksburg, Va., April 29, 1933.
Dr. Emmette Edward Walker, Pamplin, Va., June 9, 1933.
Dr. George M. Preston, Lynchburg, Va., July 3, 1933.
Dr. William Rush Gardner, Hillsville, Va., July 11, 1933.
Dr. Edgar R. Browning, Flint Hill, Va., July 8, 1933.
Dr. William Samuel Briggs, Dinwiddie, Va., August 8, 1933.
Dr. Ernest Helm Muse, Roanoke, Va., June 10, 1933.
Dr. T. G. Brown, Gainesville, Va., August 3, 1933.
Dr. Joseph A. Pilout, Sutherland, Va., December 22, 1932.
Dr. Albert Edwards Wilson, Norfolk, Va., September 8, 1933.
Dr. William J. Weindel, Marion, Va., September 7, 1933.
Dr. John Staige Davis, University, Va., September 21, 1933.
Dr. Alpheus Hartley Wood, Emporia, Va., September 28, 1933.
Dr. Henry Armistead Bullock, Richmond, Va., October 2, 1933.
Dr. Lilburn Walter Huddle, Rural Retreat, Va., October 1, 1933.
Dr. Joel Crawford, Yale, Va., October 14, 1933.

President Flippin introduced Dr. Louis Hamman (*invited guest*), of Baltimore, Md., and Dr. Hamman addressed the Society on the subject of "Neoplasms of the Lung."

The President then presented Dr. Dean Lewis (*invited guest*), of Baltimore, President of the American Medical Association, who read his paper on "Tumors of the Sympathetic Nervous System."

The program having been completed, the evening session adjourned at 10:00 P. M.

### SCIENTIFIC MEETINGS

#### Wednesday, October 25

The Medical Society of Virginia met in the Knights of Columbus Hall, Lynchburg, and was called to order at nine a. m. by the President, Dr. J. C. Flippin.

Dr. B. B. Bagby, Richmond, read his paper entitled "The Diphtheria Immunization Program in Virginia," which was discussed by Drs. F. D. Wilson, Norfolk; Percy Harris, Scottsville; T. H. Daniel, Charlottesville; W. L. Harris, Norfolk; J. N. De

Shazo, Center Cross; H. S. Daniel, Louisa; W. A. Brumfield, Farmville; Wm. B. McIlwaine, Petersburg; by Dr. Bagby; and by Dr. G. F. McGinnes, Richmond.

Dr. Wm. F. Drewry, Richmond, read his paper entitled "A Mental Hygiene Program in the Making," which was discussed by Drs. David C. Wilson, University; R. Finley Gayle, Richmond; Jas. K. Hall, Richmond; F. D. Wilson, Norfolk; and J. S. De Jarnette, Staunton.

Dr. W. Ambrose McGee, Richmond, read his paper on "The Importance of Body Build in Determining Ideal Weight," which was discussed by Drs. L. T. Royster, University; J. B. Stone, Richmond; and J. S. Weitzel, Richmond; and in closing by Dr. McGee.

The following papers were read as a Symposium on Diseases of the Stomach:

"Physiology of the Stomach," by Dr. W. R. Bond, Richmond.

"Differential Diagnosis of Diseases of the Stomach," by Dr. Blanton P. Seward, Roanoke.

"The Medical Treatment of Diseases of the Stomach," by Dr. Alex. F. Robertson, Jr., Staunton.

"Surgical Treatment of Diseases of the Stomach," by Dr. Charles Bruce Morton, University.

These papers were discussed by Drs. G. F. Simpson, Purcellville; Wright Clarkson, Petersburg; J. Shelton Horsley, Richmond; F. J. Wright, Petersburg; Fred M. Hodges, Richmond; J. Bolling Jones, Petersburg; and J. Carroll Flippin, University; and in closing by Dr. Robertson and Dr. Morton.

The program of the morning session having been completed, the Society adjourned at 12:50 p. m. for lunch.

### Wednesday Afternoon Session

The Society convened at three o'clock in the Knights of Columbus Hall, with Dr. R. L. Page, Vice-President, presiding.

Dr. C. C. Coleman, Richmond, read his paper entitled "General Management of Unconscious Patients, with Special Reference to Posture in the Treatment," which was discussed by Drs. Manfred Call, Richmond, and E. G. Gill, Roanoke; and in closing by Dr. Coleman.

Dr. John S. Horsley, Jr., Richmond, read his paper on "Abdominal Surgery in Children," which was discussed by Drs. Wm. B. McIlwaine, Petersburg; Hawes Campbell, Enfield; and J. Bolling Jones, Petersburg.

Dr. William H. Goodwin, University, read his paper entitled "Endometriosis, with Reference to Intestinal Implantations," which was discussed by Drs. A. P. Jones, Roanoke; J. Shelton Horsley, Richmond; N. G. Wilson, Norfolk; and in closing by Dr. Goodwin.

The paper of Drs. W. W. S. Butler, Jr., and C. H. Peterson, Roanoke, entitled "Roentgen-Ray Aids in Prostatic Resection," was read by Dr. Butler and was discussed by Drs. Warren W. Koontz, Lynchburg; Linwood D. Keyser, Roanoke; and Claude Moore, Washington; and by Dr. Butler in closing.

Dr. E. G. Scott, Lynchburg, read his paper entitled "Coronary Thrombosis: Report of a Case, with Some Comments on Diagnosis," which was discussed by Drs. H. B. Mulholland, University, and N. G. Wilson, Norfolk, and by Dr. Scott in closing.

Dr. William B. Porter, Richmond, read his paper on "The Management of Acute Coronary Occlusion," which was discussed by Drs. W. H. Higgins, Richmond, and N. G. Wilson, Norfolk, and in closing by Dr. Porter.

The program having been completed, the afternoon session adjourned at 6:40 P. M.

### Wednesday Evening Session

The Society met in the Knights of Columbus Hall at 8:00 P. M. and was called to order by President Flippin.

Dr. T. H. Daniel, Charlottesville, read his paper entitled "A Discussion of the Etiology, Pathology, and Treatment of the Present State of General Practice," which was discussed by Drs. R. L. Page, Batesville, and Hawes Campbell, Enfield, and in closing by Dr. Daniel.

(At this point Dr. James R. Gorman, Vice-President, Lynchburg, was called to the chair and presided during the rest of the session.)

Dr. J. E. K. Flannagan, Salem, read his paper entitled "State Medicine Problems," which was discussed by Drs. James King, Radford; W. T. Graham, Richmond; Warren F. Draper, Richmond; J. S. DeJarnette, Staunton; A. M. Showalter, Christiansburg; J. Shelton Horsley, Richmond, and C. L. Harrell, Norfolk, and in closing by Dr. Flannagan.

Dr. M. H. Todd, Norfolk, read his paper on "The X-Ray in the Diagnosis of Perforation of Stomach and Intestine," which was discussed by Drs. G. Paul LaRoque, Richmond; F. C. Rinker, Norfolk, and Marshall J. Payne, Staunton, and by Dr. Todd in closing.

The paper of Drs. C. S. Stone, Jr., University, and H. B. Holsinger, Farmville, entitled "The Diagnosis and Treatment of Gas Bacillus Infection," was read by Dr. Stone and was discussed by Drs. I. A. Bigger, Richmond; M. B. Hiden, Warrenton; G. Paul LaRoque, Richmond, and M. H. Todd, Norfolk, and by Dr. Stone in closing.

Dr. Linwood D. Keyser, Roanoke, read his paper on "The Conservative Management of Pelvic Infections," which was discussed by Drs. Guy W. Horsley, Richmond; F. O. Plunkett, Lynchburg, and M. T. McCulloch, Elkton, and by Dr. Keyser in closing.

The evening session adjourned at 11:20 P. M.

### Thursday, October 26

The Medical Society of Virginia met in the Knights of Columbus Hall at 9:00 A. M., and was called to order by the President, Dr. Flippin.

Dr. Frank S. Johns, Richmond, read his paper entitled "Surgery of the Biliary Tract," which was discussed by Drs. D. P. Scott, Lynchburg, and J. L. Rawls, Norfolk, and in closing by Dr. Johns.

Dr. Marshall J. Payne, Staunton, read his paper on "The Early Diagnosis of Primary Malignant Bone Tumors in Early Life," which was discussed by Dr. Wright Clarkson, Petersburg.

Dr. R. Finley Gayle, Jr., Richmond, read his paper entitled "Treatment of Infection of the Central Nervous System by Permanent Spinal Fluid Drainage: Report of a Case of Bacillus Pyocyaneus Meningitis," which was discussed by Drs. David C. Wilson, University; Wm. G. Crutchfield, Richmond; F. D. Wilson, Norfolk; Frank Redwood, Norfolk and Howard R. Masters, Richmond, and in closing by Dr. Gayle.

The paper of Dr. Beverley R. Tucker, Richmond, entitled "A Resume of 500 Consecutive Pituitary Cases Occurring in the General Neurological Practice," was read by Dr. Howard R. Masters and was discussed by Dr. Frank Redwood, Norfolk, and by Dr. Masters.

Dr. J. Shelton Horsley, Richmond, read his paper entitled "Further Observations Upon the Continuous Intravenous Injection of Dextrose in Ringer's Solution," which was discussed by Drs. R. L. Raiford, Franklin; Harry J. Warthen, Richmond; A. I. Dodson, Richmond, and by Dr. Horsley in closing.

Dr. Wm. H. Higgins, Richmond, read his paper on "The Relation of Iodine, with Special Reference

to Iodized Salt, to the Incidence of Simple Goitre," which was discussed by Drs. N. G. Wilson, Norfolk, and H. B. Mulholland, University, and by Dr. Higgins in closing.

Dr. Thomas W. Murrell, Richmond, read his paper entitled "The Problem of Hair Growth," which was discussed by Drs. W. S. Ferguson, Lynchburg; Howard R. Masters, Richmond, and Alexander F. Robertson, Jr., Staunton, and by Dr. Murrell in closing.

Dr. Staige D. Blackford, of University, read his paper on "The Treatment of Pellagra: A Critical Review," which was discussed by Dr. H. B. Mulholland, University.

The program having been completed, the morning session adjourned at 12:45 P. M.

### Thursday Afternoon Session

The Society met in the Knights of Columbus Hall for its final session and was called to order at 3:00 P. M. by Dr. James R. Gorman, Vice-President.

Dr. John A. Pilcher, Jr., Roanoke, read his paper entitled "The Management of Cross-eyes in Children," which was discussed by Drs. H. S. Hedges, Charlottesville, and R. H. Courtney, Richmond, and in closing by Dr. Pilcher.

The paper of Drs. Edgar C. Harper and T. S. Jennings, Richmond, entitled "Blood Sedimentation in Pulmonary Disease," was read by Dr. Harper and was discussed by Drs. J. A. Proffitt, Burkeville, and W. Ambrose McGee, Richmond, and by Dr. Harper in closing.

Dr. Charles P. Mangum, Richmond, read his paper entitled "A Rational Treatment of Pylorospasm in Infants," which was discussed by Drs. S. A. Anderson, Richmond, and C. H. Bondurant, Bedford, and in closing by Dr. Mangum.

The following three papers were read by title, the author of each requesting that this be done because of the lateness of the hour:

"Inflammatory Tumors of the Small Intestine, with Case Report," by Dr. Carrington Williams, Richmond.

"Factors Influencing Mortality in Operative Carcinomas of the Large Intestine," by Dr. A. Stephens Graham, Richmond.

"Ureterosigmoid Anastomosis," by Dr. R. P. Hawkins, Jr., Clifton Forge.

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The scientific program having been completed, the President called for the report of the House of Delegates, which was read by the Executive Secretary-Treasurer, Miss Agnes V. Edwards, Richmond.

Dr. R. D. Bates, President-Elect, Newtown, moved to adopt the report and also to extend a vote of thanks to the medical profession of Lynchburg for their hospitality. This motion was seconded and was carried by a rising vote.

President Flippin: It now becomes my pleasant duty to ask Dr. Bates to come to the platform. I present Dr. Bates.

Dr. R. D. Bates: Mr. President, and members of the Medical Society of Virginia, I would express to you my deep appreciation and my profound gratitude for this great honor. I would pledge to you the best that is in me to the carrying on of the work of this Society and to keep it up to the high mark of achievement which has been set by my predecessors. In order to do this, I ask for your cooperation and support, and if in your hands I am the humble instrument of advancing the cause of organized medicine in Virginia to even a slight degree I shall be very grateful.

President Flippin: Before passing over my insignia of office, I wish to thank this Society for the splendid cooperation they have given me, particularly the members of the committees, on which the work of the Society largely depends. In years gone by, before I knew much about it, I thought the principal function of the President of the Medical Society of Virginia was to wield the gavel and to see that the members do not exceed their time in papers and discussions. But I found that far more serious work awaited me, and that real work is being done by the committees.

In passing over this gavel to you, Doctor, I realize that I do it when a crisis faces us not only in the medical profession but in our whole country and in the world. Probably, during your term of office, things will happen that will go down in history. I anticipate that very important questions will come up too, affecting the practice of medicine in Virginia and in the nation.

I think it is most fortunate, gentlemen, that at this time a man comes into the office of president who represents the very basis and foundation stone of medicine, the branch of medicine that will always be the one upon which it rests—the general practitioner.

Sir, I offer you my best wishes.

President Bates announced the appointment of standing committees, as follows:

(The numbers after each name indicate the length of term of office.)

Scientific Work and Clinics: Dr. C. Bruce Morton (3), *chairman;* Dr. J. S. Horsley, Jr. (1); Dr. J. L. Wright (2).

Legislation and Public Health: Dr. Wright Clarkson (1), *chairman;* Dr. Frank S. Johns (3); Dr. P. St. L. Moncure (2).

Publication and Program: Dr. Wyndham Blanton (1), *chairman;* Dr. John H. Neff (2); Dr. Harry A. Tabb (3).

Medical Economics: Dr. John O. Boyd (1), *chairman;* Dr. C. O. Dearmont (3); Dr. M. H. Harris (2).

Medical Education and Hospitals: Dr. J. W. Preston (1), *chairman;* Dr. M. B. Hiden (3); Dr. Jos. T. Buxton (2).

Membership: Dr. J. A. White (1), *chairman;* Dr. Isaac Peirce (2); Dr. A. W. Hammond (3).

Ethics and Judiciary: Dr. St. George T. Grinnan (1), *chairman;* Dr. J. C. Flippin (3); Dr. John A. Owen (2).

President Bates: Is there any further business to come up?

Dr. Flippin: Dr. Joseph White, of Richmond, has been Chairman of our Membership Committee, and for about fifty years he has read out the list of deceased physicians. This year his health was such that he could not come, and I should like to move that we send him the following telegram: "You are greatly missed at the sixty-fourth meeting of the Medical Society of Virginia, and the Society sends you its affectionate greetings."

Dr. Flippin's motion was seconded and was carried by a rising vote.

President Bates: Is there any further business to come before the meeting? If not, we stand adjourned to meet in Alexandria next year at a time to be designated by the Council.

The Society adjourned *sine die* at 4:35 P. M.

## BUSINESS SESSIONS

### Council

The Council of the Medical Society of Virginia met in the Virginian Hotel, Lynchburg, Va., October 24, 1933, at 11:00 A. M., with the president, Dr. J. Carroll Flippin, presiding. Others present were: Dr. R. D. Bates, president-elect; Drs. P. St. L. Moncure,

R. W. Miller, Wright Clarkson, J. M. Shackelford, J. T. McKinney, Percy Harris, and J. E. Knight, councilors from the second through eighth districts, respectively, and Agnes V. Edwards, executive-secretary-treasurer.

The minutes of the last meeting of the Council, as printed in the October issue of the MONTHLY (pages 431-2), were approved.

Reports of Councilors were then called for.

It was the general consensus of opinion by those present that there was no abatement of interest in societies in their various districts and matters generally were moving smoothly. Dr. Knight advised that it was likely Culpeper County would organize in the near future.

Dr. McKinney said there had been some discussion in the Roanoke Academy of Medicine with regard to certain encroachments on regular practice by work done at the Southwestern and Western State Hospitals and at the preventorium for teachers at the University of Virginia, and that their representatives had been instructed to bring this matter to the attention of the House of Delegates. In answer to this, Dr. Flippin gave the history of the preventorium at the University and stated that when the profession feels that is is an encroachment upon their work, the University will be glad to take the matter up with the teachers. Dr. Harris stated that doctors in his district also felt that their work was being constantly encroached upon and spoke specifically of the care of the indigent sick. While physicians are willing to do their part, they do not wish to be imposed upon.

No action was taken on these matters as it was stated they would come up for discussion in the House of Delegates.

The budget as prepared by Drs. Clarkson and Miller, based upon last year's expenditures, was approved, as also the appropriation of $2,250.00 voted by the Council since its last meeting for the publication of the third volume of History of Medicine in Virginia.

The question of how the latter amount was to be paid was discussed and Dr. Harris moved that the Society borrow the necessary amount when needed. This was seconded and carried.

Dr. Miller wanted to know if he and Dr. Clarkson had the right to borrow money for the Society. Dr. Flippin thought they would have to do this in cooperation with the president and secretary.

There being no further business, the Council adjourned.

## House of Delegates

The first meeting of the House of Delegates was held in the Knights of Columbus Hall, Lynchburg, Va., at 2:00 P. M., October 24, 1933. The president, Dr. J. C. Flippin, presided.

Roll call showed a quorum present.

Dr. Flippin stated that a good deal of time had been spent in the House of Delegates heretofore and that those who came to represent their societies were almost entirely prevented from attending the scientific sessions. At the last meeting of the Council, he asked their authority to have reports of the various committees published in the issue of the MONTHLY preceding the meeting of the Society, with the idea that they should be read beforehand and thus save time at the meeting. Reprints had been made for the delegates. Dr. Flippin stated it was not his idea, however, that the deliberations of the meeting should be gone over hurriedly, and if it was the desire of the House of Delegates, this plan could be changed for another year.

The minutes of the 1932 meeting, as printed in the December, 1932, MONTHLY, were approved.

The executive secretary-treasurer gave the following supplementary report:

### Supplementary Report of Secretary-Treasurer

At the last meeting of the Society, we reported a membership of 1,853. Since that time we have lost forty-four by death, thirty-two by resignation, five for non-payment—eighty-one. As we have taken in sixty-one new members, there is a total loss in membership of twenty, making our membership at this time number 1,833.

The Auditor's report, showing receipts and disbursements in detail, is as follows:

### Auditor's Report—October 1, 1932, Through September 30, 1933

TO THE OFFICERS AND COUNCILORS,
MEDICAL SOCIETY OF VIRGINIA,
RICHMOND, VA.

GENTLEMEN:

We have made an examination of the books of account of the Medical Society of Virginia, Richmond, Va., for the fiscal year ended September 30, 1933, and submit herewith our report, consisting of the following financial statements and related comments:

EXHIBITS

"A" Balance Sheet
"B" Cash Receipts and Disbursements

### Comments

A summary of the financial condition of the Society at September 30, 1933, compared with a similar tabulation as of September 30, 1932, shows:

| | 9-30-33 | 9-30-32 | Decrease |
|---|---|---|---|
| Cash | $ 1,699.95 | $ 6,220.56 | $4,520.61 |
| Accounts Receivable | 3,250.00 | 3,730.86 | 480.86 |
| Investments—Bonds (At Cost) | 6,035.94 | 6,000.00 | 35.94* |
| Total Assets | $10,985.89 | $15,951.42 | $4,965.53 |
| *Less:* Account Payable | 476.39 | 472.17 | 4.22* |
| Net Worth | $10,509.50 | $15,479.25 | $4,969.75 |

*Increase.

The Cash receipts and disbursements for the current year are set forth in EXHIBIT "B". These are briefly summarized and compared with the prior year as follows:

| | Years Ended 9-30-33 | 9-30-32 |
|---|---|---|
| Receipts—Income | $12,181.20 | $14,175.77 |
| Receipts—Non-Income (Bonds) | 5,050.00 | -------- |
| Total Receipts | $17,231.20 | $14,175.77 |
| Disbursements—Expenses | $16,665.87 | $15,567.61 |
| Disbursements—Bonds Purchased | 5,085.94 | -------- |
| Total Disbursements | $21,751.81 | $15,567.61 |
| Disbursements in Excess of Receipts | $ 4,520.61 | $ 1,391.84 |
| Cash Balance Beginning of Year | 6,220.56 | 7,612.40 |
| Cash Balance End of Year | $ 1,699.95 | $ 6,220.56 |

As may be seen from the foregoing tabulation, the receipts representing income for the current year were only $12,181.20, whereas disbursements for expenses aggregated $16,665.87, resulting in an operating deficit of $4,484.67. For the prior year the

operating deficit was $1,391.84. At the close of the current year the cash balance was $1,699.95, as compared with a balance of $6,220.56, at October 1, 1932. As collections for the months of October, November, and December are usually small, the operating expenses, including cost of preparation of the Medical Journal for those months, will, in all probability consume available cash as of January 1, 1934.

We have assisted the Secretary-Treasurer in preparing an estimate of the probable income for the ensuing year, and would recommend that the Society give careful consideration to the amount available to meet 1933-34 expenses before adopting the budget for that year.

We checked in detail the cash receipts and disbursements of record and established by direct communication with the First & Merchants National Bank, Richmond, Va., the funds on deposit. Securities owned, as listed on the Balance Sheet, were inspected, and the revenue from them was properly accounted for.

The amounts owing by members for dues, and accounts due for advertising in and subscriptions to the Medical Monthly are shown at collectible values, as estimated by the Secretary-Treasurer. No attempt was made to verify these by direct communication with debtors. The Secretary-Treasurer stated that there were no outstanding liabilities at September 30, 1933, other than those shown on the balance sheet.

Insurance protection carried consists of:

| | |
|---|---|
| Fire—Office Furniture and Fixtures | $1,000.00 |
| Fidelity Bond—Secretary-Treasurer | 3,000.00 |

Respectfully submitted,

A. M. Pullen & Co.,

*Certified Public Accountants.*

### Balance Sheet—September 30, 1933
### Exhibit "A"

#### Assets

| | | |
|---|---|---|
| Cash (Exhibit "B"): | | |
| On Deposit—First & Merchants National Bank: | | |
| Checking Account | $ 48.95 | |
| Savings Account | 1,651.00 | |
| | | $1,699.95 |
| Due from Members: | | |
| (Estimated Collectible Value) 1933 Annual Dues—500 @ $5.00 | | 2,500.00 |
| Accounts Receivable: | | |
| Virginia Medical Monthly: | | |
| For Advertising | $ 700.00 | |
| For Subscriptions | 50.00 | |
| | | 750.00 |
| Securities Owned: | | |
| Fourth U. S. Liberty Loan Bonds 4¼% (1938): | | |
| Stated at Cost (Par $5,000.00) | $5,085.94 | |
| Collateral Trust Bonds 6% | $1,000.00 | |
| Less: Liquidating Dividend | 50.00 | 950.00 |
| | | 6,035.94 |
| Total Assets | | $10,985.89 |

#### Liabilities

| | | |
|---|---|---|
| Account Payable: | | |
| For Preparation of Medical Journal | $ 476.39 | |
| Surplus | | |
| Excess of Assets Over Liabilities | 10,509.50 | |
| Total Liabilities and Surplus | | $10,985.89 |

### Cash Receipts and Disbursements
### For Fiscal Year Ended September 30, 1933
### Exhibit "B"

#### Receipts

| | | |
|---|---|---|
| Medical Society of Virginia: | | |
| Dues—Members | $3,987.61 | |
| Interest on Bank Balance (½) | 78.52 | |
| Interest on Securities (½) | 74.19 | |
| Sale of Old Furniture | 14.75 | |
| Refund of Unused Appropriation by Dept. of Clinical Education (1932) | 14.11 | |
| | | $4,169.18 |

#### Disbursements

| | | |
|---|---|---|
| Medical Society of Virginia: | | |
| Salaries (Apportioned): | | |
| Secretary-Treasurer $1,620.00 | | |
| Clerical Assistance 660.00 | | |
| | $2,280.00 | |
| Rent and Telephone | 337.76 | |
| Stationery and Office Supplies | 63.62 | |
| Postage | 260.18 | |
| Reporting Annual Meeting | 182.93 | |
| Officers', Councilors' and Committeemen Expense | 50.62 | |
| Badges (2 years) | 69.80 | |
| Programs | 56.00 | |
| Repairs & Replacements—Office Equipment | 24.17 | |
| Audit Fee (apportioned) | 35.83 | |
| President's Expenses | 20.60 | |
| Miscellaneous Expenses | 33.55 | |
| Department of Clinical Education | 320.24 | |
| Committee on History of Medicine | 600.00 | |
| Committee on Scientific Work and Clinics | 50.00 | |
| Committee on Legislation | 25.00 | |
| Committee on Child Welfare | 1.05 | |
| Committee on Prohibition Questionnaire | 89.53 | |
| | | $ 4,500.88 |

| | | |
|---|---|---|
| VIRGINIA MEDICAL MONTHLY: | | |
| Advertising | | $4,852.02 |
| Subscriptions: | | |
| Members | $2,658.74 | |
| Non-Members | 348.56 | |
| | 3,007.30 | |
| Interest on Bank Balance (½) | 78.51 | |
| Interest on Securities (½) | 74.19 | |
| | | 8,012.02 |
| Total Receipts (Income) | | $12,181.20 |
| Proceeds from Securities: | | |
| Mortgage Bonds (Principal) | | 5,050.00 |
| Total Receipts | | $17,231.20 |
| Balance on Deposit—October 1, 1932 | | 6,220.56 |
| | | $23,451.76 |

| | | |
|---|---|---|
| VIRGINIA MEDICAL MONTHLY: | | |
| Salaries (apportioned): | | |
| Secretary-Treasurer | $1,620.00 | |
| Clerical Assistance | 660.00 | |
| | $2,280.00 | |
| Preparation of Journal (including cost of distribution) | 6,463.18 | |
| Rent and Telephone | 336.65 | |
| Repairs & Replacements—Office Equipment | 24.17 | |
| Stationery and Office Supplies | 24.79 | |
| Office Postage | 41.39 | |
| Audit Fee (apportioned) | 35.83 | |
| Miscellaneous Expenses | 10.69 | |
| | | 9,216.70 |
| SPECIAL APPROPRIATIONS: | | |
| Committee on Prenatal and Postnatal Instruction | $8,778.87 | |
| *Less:* From Commonwealth Fund | 6,278.88 | |
| | $2,499.99 | |
| Office Furniture and Fixtures | 448.30 | |
| | | 2,948.29 |
| Total Disbursements (for expenses) | | $16,665.87 |
| SECURITIES PURCHASED: | | |
| U. S. 4th Liberty Loan Bonds ($5,000.00 Par) | | 5,085.94 |
| Total Disbursements | | $21,751.81 |
| Balance on Deposit—September 30, 1933 (Exhibit "A") | | 1,699.95 |
| | | $23,451.76 |

It was ruled that this be received.

The next order of business was the approval of the budget as presented by the Council. In connection with this, Dr. Flippin stated that during the summer he had had a communication from Dr. Blanton with regard to the third volume on the History of Medicine in Virginia, which was ready for publication. Owing to the existing economic conditions, it was impossible to have a publisher get out the last volume unless the Society or some one guaranteed it as a financial success. The publishers offered to bring out the book if the Society would appropriate $2,250.00 with the promise that $2.25 of the sales price on each book would be returned to the Society. Dr. Flippin said he regretted that it was necessary at this time for the Society to go into its funds to this extent but the Council was unanimously of the opinion that it would be nothing short of a calamity not to complete this publication and had approved the expenditure of the $2,250.00.

After the reading of the budget, it was moved, seconded and carried that it be adopted.

Reports of Committees, as published in the October 1933 issue of the MONTHLY, were next in order.

**Scientific Work and Clinics** (page 433). As there was no addition to this report, it was ordered accepted.

**Legislation and Public Health** (page 433). Dr. Clarkson asked that his committee be given a little more time as something important had come up at the last minute and they would like to act on it.

**Publication and Program** (page 433). This was ordered accepted.

Dr. Flippin then read a letter from Dr. A. G. Brown tendering his resignation as editor of the Journal and stated that he would like to entertain a motion that a committee be appointed to bring in suitable resolutions to be sent Dr. Brown in appreciation of his work as editor. The motion was made, seconded and carried, and the following resolution was prepared:

### Resolutions of Appreciation of Work of Dr. A. G. Brown as Editor

The Medical Society of Virginia has learned with deep regret of the decision of Dr. Alexander Brown to resign as Chairman of the Program Committee of the Society and as Editor of the Medical Journal.

We feel that this is a fitting time to record our conviction of the very great service rendered the Society by Dr. Brown over the long period of years during which he has served it so faithfully.

He has unselfishly given freely of his time to this work, and as a result of his able efforts our State Journal now occupies an enviable position among the medical journals of this country.

We wish to express to Dr. Brown, in the name of our Society, our sincere appreciation of his services, and to record our regret that he has found it necessary to withdraw from his work.

HUGH H. TROUT,
J. BOLLING JONES,
WALTER B. MARTIN, *Chairman.*

**Medical Economics** (page 433). This was ordered accepted.

**Medical Education and Hospitals** (pages 433-4). Ordered accepted.

**Membership Committee** (page 434). It was moved that this report be adopted.

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The following reports were also ordered accepted:

**Ethics and Judiciary** (page 434).

**Walter Reed Commission** (page 434).

**Maternal Welfare** (pages 434-5).

**Child Welfare** (page 435).

**History of Medicine in Virginia** (page 435).

**Anesthetists and Laboratory Technicians** (pages 435-6).

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**Department of Clinical Education** (pages 436-8). Dr. Bates read the portion of this report which called for an appropriation of $1,500.00 in order that the work of the Committee on Pre-natal and Post-natal Instruction might cover the State as far as possible. Dr. Sutton, chairman of this sub-committee, stated that when the work first began it was their hope that it could be completed in two years but this had proved impossible. Unless they had further appropriation they would have to leave a portion of the State without the advantages of this course. It would take only above five months to complete the course. When Dr. Hodges was in New York, he was told that, judging from the response gotten from this meeting, ours is the best program ever put on in the United States. In answer to a question, Mr. Eutsler named the sections of the State which had not been covered by Dr. Lapham. Dr. H. C. Jones moved that the recommendations of the Committee be adopted. A delegate from the Mid-Tidewater Society stated that they would like to have this special instruction and would like a further appropriation in order that their territory might be covered. Dr. J. A. Gibson moved that the report and appropriation be voted on separately. It was then moved that the report be accepted, exclusive of the appropriation. Seconded and carried. Dr. G. F. Simpson moved that the report and the appropriation of $1,500.00 be adopted as it hardly seemed fair that three-fourths of the State be given this instruction and one-fourth not have any. This was seconded and carried unanimously.

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It being brought to the attention of the House that the Report of the **Committee on Anesthetists and Laboraory Technicians** contained a recommendation, it was moved, seconded and carried that the recommendation be approved.

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**Group Societies** (page 438). Dr. McIlwaine presented the following recommendation:

That component organizations of the Society be effected as far as possible in every county of the State. This could be done by individual counties organizing or along the lines of the Post-Graduate Society.

Following this recommendation, Dr. Southgate Leigh urged the organization of all counties in each district of the State so that they would be in better position to receive and act upon important matters to come before them in the near future. Dr. Simpson asked if both county and district societies were organized, would it not mean a duplication of representation in the House of Delegates. Dr. Moncure stated that our By-Laws cover this point and Dr. F. H. Smith called attention to Article IV, section 2, of the By-Laws in regard to representation. Dr. M. B. Hiden stated that he thought it was the duty of the Councilor to organize his district and not the duty of delegates because it is to be supposed that a delegate is representing an organized society. Dr. Richard Mason stated that the Fauquier and Loudoun Societies were entirely separate and distinct organizations but meet in one county one time and in the other the next time. Each county appoints its own delegate and alternate and each has its own president and secretary. They have much better meetings because of this cooperation.

The recommendation presented by Dr. McIlwaine was adopted.

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Dr. Clarkson stated that the Legislative Committee was then ready to make its report and presented the following:

### Supplemental Report of Committee on Legislation and Public Health

Your committee is informed that there will be an attempt made at the coming meeting of the State Legislature to make certain fundamental changes in the Workmen's Compensation Act, particularly as concerns the fees being charged by physicians and also that there will be an attempt made at the next session of Congress to defeat the present program of the President of the United States relative to reduction in governmental expenditures through discontinuing payments to veterans for non-service connected disabilities.

We ask your approval of the work done by us along these lines during the past year, particularly in reference to our working in conjunction with the "Virginia Committee on Reduction of Governmental Expenditures" and with the "Workmen's Compensation Committee of the Virginia Manufacturers' Association," and, since we will be called upon to make some very important decisions relative to these matters we want power to act to the best of our judgment in protecting the interests of the physicians of our State.

We hereby request authority to appoint such subcommittees as we may deem necessary in order to properly carry out our work.

We will appreciate your approval of the requests herein contained together with the following resolutions:

RESOLUTIONS

*Whereas*, President Roosevelt, under powers granted him by Congress, has eliminated from government aid, all veterans suffering with non-service-connected disabilities, and

*Whereas*, Such action by the President has saved many millions of dollars from the unbearable tax burden of the people of this country, and

*Whereas*, The President has provided that all veterans suffering with sickness or injury, contracted in the service, shall be well cared for, and

*Whereas*, All sick or disabled people, veterans or otherwise, who are without means may receive all needed care from municipal or state agencies, and

*Whereas*, The care by the National Government of those veterans suffering with non-service-connected disabilities placed an unreasonable burden on the government, the cost rapidly increasing each year and requiring the building of large and expensive hospitals, and

Whereas, Many of the veterans' organizations in the country are making systematic and vigorous efforts to have these privileges restored:

THEREFORE, BE IT RESOLVED, By the Medical Society of Virginia, in annual meeting assembled, that the Society heartily endorses the stand taken by the President, and offers him its assistance in maintaining his stand, and

Resolved, That the Society shall make every effort to educate the public in regard to the danger confronting it, and

Resolved, That each county society, each individual doctor, and the members of the Woman's Auxiliary to the State Society, be urged to take prompt and positive action to cooperate in this effort, and

Resolved, That a copy of this resolution be sent to the President, and to each Senator and Representative from Virginia.

Wright Clarkson, *Chairman*,
J. W. Robertson,
P. St.Leger Moncure,
*Committee.*

Dr. Clarkson then asked the privilege of the floor for Dr. Southgate Leigh to discuss the situation with regard to the veterans. This being granted, Dr. Leigh spoke as follows:

"This is a grave and dangerous matter which is confronting the profession. My report as Delegate to the American Medical Association gives briefly the attitude of that organization. I have sent each delegate from the county societies, whose name has been forwarded me by Miss Edwards, a copy of a letter from Dr. Cary, former A. M. A. President, and now chairman of a special committee handling this important matter.

"By a former action of Congress, veterans suffering with non-service-connected disabilities were granted medical and hospital care by the government. This entailed the building of large hospitals and employing of a large number of contract doctors. It was also a long step towards 'State Medicine'. The expense, increasing rapidly, was an onerous burden on the government and tax-paying public, and in the words of Dr. Dean Lewis, President of the A. M. A., would eventually have bankrupted the country. Under extraordinary powers granted to him by Congress, President Roosevelt cut off this privilege and saved thereby four hundred million dollars annually. Now the veterans, strongly organized all over the country, are making strenuous efforts to have the privilege restored.

"In order to combat this effort, it will be necessary to create strong support for the President. The public must be educated and the matter made plain to each senator and representative from Virginia, so that he will stand firmly behind the President. The doctors of Virginia can do this. They have great influence in their various communities. Every individual doctor in the State must be aroused, and each local society, aided by the Woman's Auxiliary, must do its part promptly and vigorously. There are fifty-one component societies in the State, covering eighty-eight counties. Of these, however, there are six group societies containing from four to nine counties apiece and totaling thirty-seven counties. Through the group societies these counties should be so organized that there shall be one or more doctors in each to represent his county for business or legislative purposes.

"President Roosevelt has done almost the unbelievable and has closed the door on this step in state medicine and unreasonable expense. The danger is that sufficient pressure may bring about a compromise. Such opening of the door would be a great danger. This is a vital matter in which the safety of the profession is at stake."

Dr. Simpson stated that at the Roanoke meeting his committee brought in a report with regard to this work and he felt that this discussion was the climax of his report. The assistance of each medical man in the State is needed as the Legislative Committee cannot handle this alone.

As a member of the Legislative Committee, Dr. Moncure made the following statement with regard to the Workmen's Compensation Act:

"I understand that the Workmen's Compensation Committee of the Virginia Manufacturers' Association are considering a bill to present to the next legislature looking to changes in the present law. Your chairman was invited to attend a meeting of that Committee which met at the John Marshall Hotel, Richmond, February 7th, last, and he with two other members of the profession—Dr. J. Bolling Jones, of Petersburg, and Dr. M. H. Todd, of Norfolk—attended, and I understand were given a cordial reception and the Committee promised to cooperate most liberally with the medical profession in any legislation that might be transacted, along the line of recommendations by the Bureau of Medical Economics of the American Medical Association in their report Medical Relations Under Workmen's Compensation. I will quote one clause of this recommendation—number 5—as follows: It is important that in every state medical society there should be an active committee devoted to the study of the problems of industrial medicine. Wherever compensation laws exist, this committee should be in close and continuous contact with the administration of compensation to the end that medical subjects be presented from the scientific professional standpoint and that all physicians may be kept fully informed of any questions at issue.

"I do not know that a resolution is necessary, but I do think that the attention of the Society should be called to the fact that a change or amendment in the present law is contemplated; and that the legislative committee or some special committee be advised to be on hand to protect the interests of the medical profession."

Dr. Hiden stated that a number of years ago one of the big insurance companies issued orders that none of the doctors in Northern Virginia could treat that company's patients as the doctors had done something to displease them, and gave orders that patients be taken to Washington doctors. The insurance company came out at the wrong end as a result of this order.

Dr. Clarkson's report with resolutions was seconded and unanimously adopted.

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Dr. Flippin said that, in accordance with the By-Laws, the Nominating Committee should be appointed at this meeting and gave a recess that delegates from the various districts might make their selections.

The Committee was named as follows:

1st District—Dr. J. N. DeShazo
2nd District—Dr. W. B. Martin
3rd District—Dr. J. B. Stone
4th District—Dr. W. D. Kendig
5th District—Dr. J. M. Shackelford
6th District—Dr. W. O. Powell
7th District—Dr. P. W. Boyd
8th District—Dr. J. A. Gibson
9th District—Dr. T. K. McKee
10th District—Dr. G. T. Harris

The House then adjourned to meet again the following day at 3:00 P. M.

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### October 25, 1933

The House of Delegates met on Wednesday, October 25th, at 3:00 P. M., in the Virginian Hotel, with the president, Dr. J. C. Flippin, presiding.

Roll call showed a quorum present.

The report of the Nominating Committee was first called and the following was submitted:

President-Elect—Dr. Francis H. Smith, Abingdon.

Vice-Presidents—
Dr. P. St. L. Moncure, Norfolk.
Dr. Wright Clarkson, Petersburg.
Dr. J. T. McKinney, Roanoke.
Executive Secretary-Treasurer—Agnes V. Edwards, Richmond.

It was moved that nominations be closed and the Secretary was instructed to cast the ballot.

The question was asked if a member could serve as a councilor and as a vice-president at the same time. Dr. Moncure thought there was nothing in the By-Laws against this but felt that the honors should be divided and said he would like to tender his resignation as vice-president. Dr. Clarkson then offered a motion that the three vice-presidents be allowed to resign as they were all councilors and he was sure Dr. McKinney would feel about this as did he and Dr. Moncure. In view of this, the Nominating Committee was asked to select three other vice-presidents and the following were elected:

Dr. Hugh H. Trout, Roanoke.
Dr. B. B. Dutton, Winchester.
Dr. James K. Hall, Richmond.

Upon nominations by delegates of the respective districts, the following were selected as councilors from the odd numbered districts:

*First District*—Dr. Griffin Holland, Eastville.
*Third District*—Dr. Roshier W. Miller, Richmond.
*Fifth District*—Dr. E. H. Miller, Danville.
*Seventh District*—Dr. Percy Harris, Scottsville.
*Ninth District*—Dr. C. B. Bowyer, Stonega.

Following a vote by ballot, Dr. J. C. Flippin and Dr. H. H. Trout were elected delegates to the American Medical Association, and Dr. P. St. L. Moncure and Dr. Southgate Leigh were elected alternates. Dr. Warren F. Draper holds over as delegate and Dr. Walter B. Martin as alternate.

While the ballots for delegates and alternates to the American Medical Association were being counted, the Secretary was asked to read the following report from the Woman's Auxiliary:

### Annual Report of the President of the Woman's Auxiliary to the Medical Society of Virginia

Mr. President and Members of the Medical Society of Virginia:

I have the honor of presenting the Annual Report of the Woman's Auxiliary for the year ending October 1, 1933.

The Woman's Auxiliary has had a most interesting year in spite of the trying economic conditions prevailing throughout our country.

Our principal aim this year has been the organization of new Auxiliaries. Three new Auxiliaries have been formed this year; namely, Warwick County, James City and New Kent Counties, and Elizabeth City County. The Elizabeth City County Auxiliary was so small that it decided to work as a committee with the Warwick County Auxiliary and the members become members at large of the State. These, with the three Auxiliaries already established, make five Auxiliaries in the State, besides one Junior Auxiliary.

There are 229 active members. The Treasurer reports 136 members have paid their dues up to date. This report is small, because some of this year's dues were sent to the State Treasurer before the last annual meeting and were credited on last year's report.

The work of the Auxiliary is divided into general groups, namely, Program and Education, Public Relations, Social, and the Promotion and Distribution of *Hygeia*.

Health education has been one of the outstanding interests of the Auxiliary, both in educational programs for Auxiliary meetings and in promoting health projects in other women's organizations under the Public Relations Committee. Lectures have been given before the Richmond Auxiliary on the following subjects: "*Women and Children in Industry*," "*Health Conditions in Our City*," "*What a Community Fund Means to the Welfare Conditions of Our City*," "*Efficiency—Our Highest Duty*," "*Frederick Banting*," "*William Osler*," "*Rural Nursing*." The Norfolk County Auxiliary has instituted fifteen minute radio talks by prominent physicians in the County Medical Society. They have also had lectures on "*The Child's Bill of Rights*," and "*Pre-Natal Care*."

The Public Relations activities have been as follows: The Warwick County Auxiliary has sponsored health lectures in public schools. They have been active in Pre-Natal work, such as making layettes, giving advice to prospective mothers, arranging for necessities and medical attention for delivery. They have assisted visiting nurses by furnishing supplies to patients and transporting them to the Tuberculosis Clinic. They have cooperated with the Cosmopolitan Club in checking up on school children's eye glasses and have financed one operation. They have given 572 garments for storm relief in August, 1933.

The Post-Graduate Auxiliary has centered its work on the welfare work of the Petersburg Hospital. They have cooperated with the Y. M. C. A. by contributing a membership to one boy.

The Auxiliary to the Richmond Academy of Medicine has aided the Tuberculosis Associations and done other hospital work, taking an active part in the membership drives put on by these organizations. They have donated $500 for the support of the Merriewood Harrison Camp for undernourished children. Nine hundred garments were collected for these children and their families. They have contributed to the Dooley and St. Philip hospitals by making donations of toys, clothing, reading to children, and supplied funds necessary for redecorating rooms in the Dooley Hospital. They have also given financial aid to the new Negro recreational building. The five-point children of each county, selected by the State Department of Health, were entertained by the Auxiliary at the meeting in November.

The Norfolk County Auxiliary sponsored a competitive essay contest in the public schools on the "*Cause, Prevention and Cure of Tuberculosis*." The State Director of Child Welfare talked on "*Some Phases of Health Education*" at a Public Relations Tea to which representatives of various civic organizations were invited. They have generously contributed to the Norfolk Community Fund, the Portsmouth Charity Drive, two families of needy physicians, and for work in occupational therapy for indigent children in local hospitals. Books and magazines have been given to hospital libraries. During a week's emergency the Auxiliary delivered free milk to both white and colored lunch rooms in the city schools when the school trucks were not available for this purpose. A contribution was added to the "Benevolent Fund," which was established two years ago. Draperies have been furnished to the Medical Assembly Hall and presented to the doctors. The Auxiliary is collecting pictures of all past presidents of the local society which are to be hung in the Assembly Hall. The Junior Auxiliary is obtaining from the doctors samples of medicines to be distributed to clinics. The biographies of two past presidents, Dr. Kirkland Ruffin and Dr. Charles R. Grandy, have been written for the Archives.

The James City and New Kent County Auxiliaries are using *Hygeia* as a basis for their programs at meetings and then placing the copy in a public

place for the benefit of the laity. "Hospital Day" was sponsored by this Auxiliary.

Under "Social Activities" the Auxiliaries have had their meetings followed by luncheons and teas. Card parties have been given by nearly all of them in order to raise funds for the promotion of their undertakings.

In order to stimulate interest, the President has attended regular meetings of most of the Auxiliaries, at least once during the year and has held many conferences with Board members.

The members of the Woman's Auxiliary express their appreciation to the editor of the VIRGINIA MEDICAL MONTHLY for allowing us space in each issue of the Journal for Auxiliary news.

I cannot let this opportunity pass without thanking the President and the members of our Advisory Council for their interest in this Auxiliary and for the invaluable advice which they have given us.

Respectfully submitted,

GERTRUDE M. BURGES HARRIS.
(MRS. WILLIAM LETT HARRIS),
*President of the Woman's Auxiliary to the Medical Society of Virginia.*

This was ordered received and a motion made that the Society thank the women for their very creditable work.

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Invitations for our 1934 meeting were received from the Princess Anne County Medical Society, the Norfolk County Medical Society, White Sulphur Springs, W. Va., and from the Alexandria Medical Society. The latter was accepted and Alexandria is to be the 1934 place of meeting.

Dr. W. D. Kendig stated that Dr. Southgate Leigh has given a good deal of time and money as a representative from our Society to the American Medical Association, and he moved that he be given a vote of thanks for his long, faithful and enthusiastic service to the Society. This was seconded and carried.

It being stated that the members of the State Board of Medical Examiners should be nominated to the Governor this year, it was moved, seconded and carried that the present incumbents be renominated. These are:

Dr. R. D. Bates, Newtown.
Dr. P. St. L. Moncure, Norfolk.
Dr. H. U. Stephenson, Richmond.
Dr. F. J. Wright, Petersburg.
Dr. I. C. Harrison, Danville.
Dr. J. W. Preston, Roanoke.
Dr. P. W. Boyd, Winchester.
Dr. Lewis Holladay, Orange.
Dr. F. H. Smith, Abingdon.

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Committee reports were then resumed.

### Committee on Public Relations

The report of this committee, as published on pages 438-442, October, 1933, MONTHLY, was adopted.

Dr. A. F. Robertson then presented the following resolutions with regard to the Federal Emergency Relief:

RESOLVED, That the Public Relations Committee of the Medical Society of Virginia disapproves of the plan proposed by the State and Federal Emergency Relief organization for the compensation of physicians on a fee schedule basis for the care of the indigent sick; and be it also

RESOLVED, That we recommend to the various county medical societies that they cooperate with the local relief agencies in working out suitable plans for the medical and surgical care of these cases without charge for services rendered.

Dr. Robertson then read two letters in explanation of these resolutions, after which Dr. Moncure moved their adoption. This was seconded. Dr. Hutcheson asked if it was the idea of this resolution that a county or component society could do as it wished in regard to these rules. It was stated that this was the opinion of the committee. Dr. Percy Harris felt that welfare bureaus all over the country were doing doctors more harm than anything else, and read a letter from the Welfare Bureau of Albemarle County and his reply, and stated that to this time he had not received an answer. He said this was a dangerous point and that these organizations are working against the doctors. Dr. Flippin stated that he had a letter from Dr. Flannagan asking permission for Mr. William A. Smith of the Federal Emergency Relief Administration to explain this situation to the Society but Mr. Smith was not present. Dr. M. B. Hiden stated that the United States government had appropriated a certain amount to relieve suffering, and divided it among the states. When this is sub-divided for county work, a welfare worker has to be employed. After paying his salary and meeting other expenses, there is an exceedingly small amount for the doctors and nurses. The small counties can't possibly handle this. He said that the federal administrator decides who is indigent and who is not. A permit has to be obtained and the man holds this permit; if he thinks the doctor does not complete the requirements, he can turn it in to the Board and the doctor gets nothing for his services. Prince William and Fauquier are adjoining counties and when Prince William got its apportionment, Fauquier wrote for its but was told it had not had enough depression and was not eligible to get the money. They were told that the money had been given to Alexandria, but a leading physician of that city knew nothing about it. When accepting the terms of the Federal Emergency Relief Administration, the doctor has to do very extensive paper work, giving symptoms, treatment, list of drugs used on each treatment, etc. While the committee recommends that the various county medical societies cooperate with the local relief agencies, each society is free to do as it wishes.

Dr. Robertson said that the Federal Emergency Relief Administration did not ask us to adopt the Kentucky schedule, but showed it to the committee and asked them to adopt some schedule. Dr. Herbert Jones stated that this emergency relief only affects people who have been thrown out of work by the depression and does not affect the regular charity work. The Administration's attitude was intended to be one of helpfulness and a means of helping physicians who are financially disabled. Whatever steps we take, we have to realize these people exist. If we refuse this plan, it is up to each society to work out some scheme of taking care of these indigent people. We are not opposed to the Federal Emergency Relief, but our position is that we would make a mistake to accept a schedule of fees because, if we do establish a schedule of fees, it will be immediately assumed by a large number of people that this is a fair scale and they will demand sooner or later that they be supplied with medical care on this fee basis. We can better afford to sacrifice the small income that this would give us than to accept their sliding scale of fees.

Dr. Flippin thanked Dr. Jones for this explanation and said it is up to the medical profession to select a way in which this relief can be adequately given. He was recently at a meeting in Washington concerning undernourished children throughout the country. This is seemingly becoming a problem. It was proposed that the work of looking out for

these children should be done through local agencies but the intention was to work in full cooperation with the medical profession.

Dr. W. B. Martin did not think the House of Delegates should lay down any rule which the local societies should follow as conditions in the local societies differed. We recommend that this Society should not adopt a schedule of fees for the State and that this work be carried on without charge, but realize that the local societies will have to work out individually the plan best suited to their needs.

Dr. G. F. Simpson stated that we have 100 counties in Virginia and he presumed most of them have a board of supervisors. If the appropriation could be handled by the board of supervisors to be distributed to the already existing agencies, there would be no necessity for so many different organizations in the State. There is no organization in a county which would know better how to distribute the money than the board already in existence. He felt that the Society should adopt a motion that the money be distributed through the already existing boards of supervisors. This will be a cooperative work and carry out the plan as laid down by the President. Dr. Martin stated that this was against the law. The amount that is going to be available is to be extremely small. Only a portion of it is to be used for medical care and this is to include all medicines, dressings, etc.

Dr. Jones felt that the settlement of this question was very important as doctors are representative citizens in their communities. The closer they stick to the middle of the road and do as they have done, the better off they are going to be. A tradition of the medical fraternity is that they will help when they are called on. Each will take care of his own charity. The Petersburg Medical Faculty has appointed a committee to study the question in Petersburg, following which they will make recommendations to the City Council.

The resolutions presented by Dr. Robertson were then adopted.

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**Committee on Military Affairs and National Defense** (page 442). This report was accepted.

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**Committee to Make Inquiry into Effect of Using Iodized Salt** (page 443). Report accepted.

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**Committee on Mental Hygiene.** Dr. Frank H. Redwood, referring to the recommendations of his committee (page 442), stated:

"Your committee on Mental Hygiene has been functioning three years and during that time we have had several meetings each year. We have recommended certain things, but so far nothing has been done with these recommendations, due to the lack of funds.

"It seems to me that if any constructive work, which is badly needed in this state, is to be done by the Bureau of Mental Hygiene, adequate funds must be made available. The clinic in Richmond, even though their funds have been markedly curtailed, is still doing valuable work and the expansion of this work should be encouraged.

"I, therefore, move that the legislative committee of the Society contact the proper committee of the legislature to see if an adequate appropriation cannot be obtained for the purpose of carrying on and expanding the work of the Bureau of Mental Hygiene."

This was seconded and carried.

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**Committee on Tuberculosis Clinics** (page 442). This report was accepted.

**The Reports of Delegates to the American Medical** (pp. 443-445) were accepted.

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### New Business

Dr. Richard Mason stated that a resolution was passed by the Fauquier County Medical Society to suggest to the House of Delegates the question of court fees. No matter how many cases a physician has on hand, he has to appear in court to give evidence as an ordinary witness whenever called, for which he used to receive 50 cents a day, but this has been reduced to 40 cents. There is no way of getting out of testifying, if summoned, and the lawyers frequently succeed in getting the doctor to give expert testimony. It occurred to him that the House of Delegates should find some way to remedy this situation and he suggested that the Legislative Committee appoint a committee to look into this question, or take it up themselves with the next Legislature, in an effort to have the law changed so that these hardships may be corrected and that physicians testifying in court may receive adequate pay for services rendered. A motion was made that this matter be referred to the Legislative Committee. Seconded and carried.

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Dr. F. H. Smith presented the following appreciation, handed him by Dr. J. M. Hutcheson, with regard to the work done by Dr. Wyndham B. Blanton, as chairman of the Committee on History of Medicine in Virginia:

History has recorded the contributions of Virginia to statesmanship, to military science, to literature, to art and to all the industries. But throughout the centuries the achievements and the contributions to civilization of the members of our profession have suffered relative neglect. From pioneer days even to the present hour physicians of Virginia have made their impress upon every domain in the expanding field of medical thought—in teaching, in discoveries, and in the daily application of science in its warfare against disease. We are grateful to our former president, Dr. J. W. Preston, for the happy inspiration that moved him to bring about the creation of a Historical Committee. Two volumes, embracing Medicine in Virginia from 1607 to 1800, have already been placed in our hands by that Committee. The third volume, dealing with the period from 1800 to 1900, is now on the press. The members of that Committee, Dr. Wyndham B. Blanton, Dr. Frederick C. Rinker, and Dr. Beverley R. Tucker, have done their work well. To them, and particularly to the active author of those magnificent volumes, Dr. Blanton, not only this Society, but society in its comprehensive sense, owes a debt of great gratitude. Although a busy practitioner, burdened with heavy daily duties, Dr. Blanton has taken the time to scrutinize and to catalogue the activities of the physicians of Virginia for the past three hundred years. The volumes afford not only an account of the progress of medicine within that period, but they furnish also a comprehensive and an intimate view of the lives and the souls of men and women, servants and masters, all busily engaged in planning and in bringing to full fruition in a new world a new and a different form of civilization. It is the sense of this Society that Dr. Blanton has not only rendered conspicuous and meritorious service as its agent but that he has also established himself as an outstanding historian.

This was adopted.

Dr. F. H. Smith then presented the following:

### Resolutions Concerning Irregular Practices at Certain State Hospitals

*Whereas*, The General Hospital Board has recently found that the medical officers of the Southwestern State Hospital have been practicing medicine and surgery at that institution on persons who have not been legally admitted to this Hospital; and that the Western State Hospital has built and is operating a detached unit for the care and treatment of a class of psychotics and neurotics, not all of them citizens of the State of Virginia, and none of them listed as patients of the Western State Hospital, to be charged in excess of the cost of maintenance at that institution, and yet less than the bare cost of maintenance in any private institution; and that the surplus thus derived is being retained by the officers of the Western State Hospital, and not turned back to the State treasury.

*Whereas*, The medical officers of the five State institutions for insane are paid salaries and other perquisites of office adequate to maintain them and their families; and these salaries are derived from general taxation, and physicians are taxed for this purpose by assessment equal to that of all other citizens.

*Whereas*, Practice of this sort is a long step toward a situation even more obnoxious than "State Medicine," for in these present instances only a small fraction of the total physicians and institutions of the State are subsidized at the expense of the many non-subsidized.

*Whereas*, Profit-making by the State at the expense of any class of its sick people is wrong, ethically speaking, because it is tainted with commercialism; and unfair, because such practice puts the State into direct and destructive competition with a profession and business universally admitted to be a necessity in civilized society; and, furthermore,

*Whereas*, Any use of the property and the facilities of the State for private gain, including the private practice of medicine, is, in our opinion, illegal, if not actually unconstitutional; and failure to pay into the State treasury any surplus which the institution may have at the close of any fiscal year is also illegal, in our opinion; and yet

*Whereas*, There are intimations that efforts will be made to legalize such illegal practices by legislative enactment: Now, Therefore,

BE IT RESOLVED by the House of Delegates of the Medical Society of Virginia, in regular session at Lynchburg, Va., on October 25, 1933,

*First*. That we, speaking for and in behalf of the organized regular medical profession of the State of Virginia, hereby express our commendation of the action of the General Hospital Board in the two specific instances mentioned above, insofar as this action went into the matters complained of; and that we request this Board to be diligent to see that its recommendations are faithfully complied with. For we realize that the wording of the resolutions of the General Hospital Board in each of these two instances leaves room for wide evasions.

*Second*. That we hereby record our definite and vigorous opposition to any and all practice of medicine at and from a State institution, except that practice for which each of the said hospitals was intended.

It is the plain intention of the State, when employing the medical staff of a State hospital, to employ a personnel adequate to render efficient service to the inmates of the said hospital, *and for no other purpose*.

Efficient service to one or two thousand insane individuals, for instance, is presumed to require the full working time of each member of the staff.

If, therefore, the members of the medical staff of any State hospital have time to devote to other practice, one of two conclusions is inescapable: namely, either this staff is overmanned, or the duties for which the members are employed are being proportionately neglected.

Either conclusion is intolerable.

Therefore, it follows that the State-employed physician should divorce himself absolutely from all other practice, and should devote himself exclusively to the duty for which he is employed.*

*Third*. That we also oppose and protest the use of any building or unit of a State hospital in any way to deprive a profit from operation; whether the patient be committed by process of law, or enter the institution voluntarily; whether the patient be a citizen of this State, or not; whether the said profit be derived from physician's fees, or from hospital charges; whether the illness causing admittance be in line of said hospital's work, or outside of the special character of such work; and whether the said profit is to accrue to the medical staff, or is to be entirely expended upon capital improvements of the said hospital, or is to be turned into the State treasury.

*Fourth*. That a copy of these resolutions, certified by the President and Secretary of this Society, be placed in the hands of the Governor of the State of Virginia and of the Commissioner of Public Welfare (who is *ex officio* chairman of the General Hospital Board), as reflecting the considered opinion of the medical profession of the State.

*Fifth*. That we hereby instruct the Legislative Committee of this Society to be alert to detect any effort which may be made to legalize by legislative enactment such practices as we are condemning herein, whether such effort be made openly, or by "rider" to an otherwise inoffensive legislative bill; and if such bill be introduced, to oppose its passage with all the weight and influence of the organized medical profession of the State.

*Sixth*. That we regard the two above mentioned situations significant, furthermore, because they are two specific instances of the encroachment of all units of government—Federal, State, county and municipal—insidiously, but steadily and unrelentingly, upon the private practice of medicine. In other words, they are but milestones in the progress toward "State Medicine."

*We therefore, direct the President of this Society to appoint a Special Committee to investigate thoroughly all governmental activity of whatever source*

*If the above reasoning be sound, it is immaterial and beside the point whethor or not fees be charged. For, in either event, the tax-supported State-employed physician deprives other physicians of their rightful oportunity to earn and receive legitimate fees which would have been their's had not these State-employees taken over the service.

If, however, fees be charged and retained by the State-paid physician, he compounds the offense by privately practicing on or in State property, and by using public facilities for private gain.

If, on the other hand, he extends his services gratuitously to those who are able to pay, he further offends by pauperizing that part of the public, with all of the evils growing out of such a process.

The same reasoning applies in the case of admittance to a State institution on the grounds of "policy," personal friendship, or non-dependent kindship to an employee.

Likewise, if the time of the staff is fully occupied with its regular duties, it has no time to devote to the "pauper patient," whether a genuine pauper, a semi-pauper or a pseudo-pauper.

Nor is the allegation of general "emergency" an adequate excuse for such practice. With the present-day spread of physicians, surgeons and hospitals, and with the present development of highways and means of transportation, the occasion is so rare that it is almost non-existent which will justify the admittance of a medical, surgical or obstetrical emergency to the care of a staff of psychiatrists, for example. The more devoted the staff to its special work, the less time the personnel has to care for the general emergency, and the less its desire for such work.

*in the domain of medicine within the State of Virginia.*

*Seventh.* That, if funds in excess of those already allocated to the Legislative Committee be necessary to carry out the purpose of these resolutions; and if funds be required by the Special Committee herein provided for; and if in each instance the President of this Society approves: either Committee, or both, is hereby authorized to draw upon the general funds of this Society, not otherwise appropriated, for a sum not to exceed $_____, or as much thereof as may be needed to discharge the purpose of these resolutions.

Dr. W. L. Powell said that the Roanoke Academy of Medicine had also instructed its delegates to bring this matter to the attention of the Society. He said that besides what Dr. Smith had read, some State tuberculosis sanatoria were doing irregular work, and the city and county health officers were administering antitoxins, giving rabies treatment, etc., free of charge, when patients should be sent to their family doctors. There are encroachments all along the line. Dr. C. H. Peterson then offered the following amendment to the resolution:

That a committee of five be appointed from various parts of the State, none of whom shall in any way be connected with the State, municipal or county health department, or necessarily a member of the House of Delegates, to investigate any condition where physicians employed by the State, city, or county as health officers or otherwise, seem to be practicing medicine or using equipment owned by the State in competition with licensed practicing physicians and surgeons; that they shall file their report, together with any recommendations, with the Council of the Medical Society of Virginia in time for their mid-winter meeting which is usually in January.

This was seconded by Dr. C. L. Harrell who said he thought Dr. Smith's report should be given more consideration.

Dr. Flippin, who had asked the president-elect, Dr. R. D. Bates, to take the chair, said that this resolution, in specifying State institutions would include the two medical schools of the State as the salaries of the men connected with these institutions are paid by the State. If passed, it would succeed in closing the two schools in twenty-four hours. Dr. Smith stated that this meant insane hospitals. Dr. J. K. Hall said that in the State of Virginia the four institutions for the insane and the Epileptic Colony are maintained by appropriations from the State and are the only ones named as State institutions. Dr. Moncure stated that he felt the tuberculosis sanatoria were State hospitals. Dr. H. C. Jones said he felt sure that only about one-half of the resolutions were heard by all the members and wondered if it might be referred to a committee to report on at a later session of the House of Delegates or to the Council. Dr. Powell read Dr. Peterson's resolution again. Dr. W. B. Martin moved that we adopt Dr. Peterson's resolution as a substitute motion and refer it to a committee and have a report before we take any action on Dr. Smith's report. Dr. Powell stated there was no difference between Dr. Smith's and Dr. Peterson's resolutions except that Dr. Peterson's clarified the situation. Dr. Smith thought that Dr. Peterson's motion was broader but was willing to accept it as part of his resolutions. Dr. Martin still felt that a special committee should study the question before any action was taken by the House of Delegates. Dr. Smith said that the idea was to have the support of the organized medical profession when this question comes up before Legislature next year and if it was referred to a committee it would only have the backing of that committee of five.

Dr. J. K. Hall, who is a member of the State Hospital Board, told of the establishment of the DeJarnette Sanatorium and of the treatment of patients there whose records are not included in those of the Western State Hospital. It charges patients about one-third of what a private sanatorium charges and has admitted patients from other states. It is not operating as an arm of the Western State Hospital though it was built with State funds. Other State hospitals are much overcrowded. He also spoke of the treatment of surgical cases in the new building of the Southwestern State Hospital and told of the crowded conditions in all State hospitals with the exception of those at Staunton and Marion. The superintendents of these hospitals had been told beforehand that this matter was coming up at this meeting that they might be on hand to defend themselves. He understood that it was their plan, if possible, to have the General Assembly legalize their work and that they did not wish a word to come out against them here at this meeting.

Dr. H. C. Jones suggested that we appoint a committee to bring in a report the following day. Dr. G. F. Simpson said that any fact finding commission must have the support of the Society and he hoped that the House would vote for Dr. Smith's and Dr. Peterson's resolutions as he felt these men would not have preferred charges without a good reason. Dr. Martin's substitute motion being put to the vote was lost.

Dr. Peterson's resolution was then accepted as an amendment to Dr. Smith's resolution, in place of paragraph 2 of the sixth resolution (italicized), and was adopted as amended.

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Dr. Wright Clarkson, chairman of the Committee on Legislation and Public Health, asked the consent of the House to present to Legislature the proposed uniform Narcotic Drug Act as approved by the American Medical Association.

Dr. Moncure moved its adoption. Seconded and carried.

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Dr. W. B. Martin presented the following resolutions by Dr. Isaac Pierce:

*Whereas*, It would appear from an expression of opinion at an election held October 3, 1933, that the people of Virginia are opposed to continuance in the experiment of either National or State Prohibition; that delegates have been elected to ratify an amendment to the National Constitution for the repeal of the Eighteenth or Prohibition Amendment; that a commission has been created to study the question of State control of the distribution of alcoholic liquors and make recommendations to the next legislature of Virginia, in the event of the repeal of the State Prohibition Law, and that this committee is now holding public hearings and asking for an expression of opinion from any who are interested in or affected by the proposed change; and

*Whereas*, It has been the custom in drafting almost all former laws to involve the medical profession in this matter, much to its embarassment and inconvenience—the present law, both National and State, making a doctor's prescription the only legal method of obtaining and possessing alcoholic liquors, even dictating quantity and quality prescribed; Therefore be it

RESOLVED, That no plan for State control of the distribution of alcoholic liquors will be acceptable to the members of the Medical Society of Virginia which will involve prescribing them by a physician,

or in any way limit or dictate to the physician the quantity or quality he may deem necessary in the treatment of his patient.

That a copy of this resolution be forwarded to the committee now studying the matter, and request their consideration of same; that the legislative committee be instructed to present this matter to the next legislature and in every way endeavor to see that the medical profession is relieved of all responsibility in the distribution of alcoholic liquors other than in the legitimate use of them in the treatment of disease.

It was moved, seconded and carried that this be adopted.

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There being no further business, the House adjourned *sine die*.

AGNES V. EDWARDS,
*Secretary.*

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# Woman's Auxiliary, to the Medical Society of Va.

*President*—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.
*President-Elect*—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.
*Recording Secretary*—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.
*Corresponding Secretary*—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.
*Treasurer*—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

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**Lynchburg Meeting.**

The meeting of the Auxiliary to the Medical Society of Virginia, at Lynchburg, was edifying in every respect. The business sessions were very well attended. A majority of the officers were present and gave well written and encouraging reports. The reports of the accomplishments of the three new auxiliaries were splendid, considering the short time since their organization. They were a real inspiration to those of us who have labored these years. We are hoping for more new chapters to spring up before another year's reports are due.

The delightful program provided by the Lynchburg women for the entertainment of the guests was much appreciated. Business was combined with pleasure but we are almost forced to admit that pleasure outweighed business on some counts.

Following the business session on Wednesday, October 25th, there was a very lovely luncheon at the Boonesboro County Club. The club house iself is quite worth making a visit to see and the warm hospitality made it doubly attractive. None of us who took that wonderful drive to Natural Bridge after the luncheon will ever forget the thrill of that circuitous trail across the mountains. Others reported an equally happy two hours visiting Sweet Briar College and other points of interest around the city. A card party was also an interesting function and was much enjoyed by those who love the game.

Reports of officers as given at this meeting will appear in the MONTHLY from time to time.

EXCERPTS FROM THE PRESIDENT'S ADDRESS

Mrs. William Lett Harris, State President, in her address to the Auxiliary, stated:

"This has been a busy year, full of interest and activity. The wonderful spirit of cooperation which has permeated the whole year's work and the interesting contacts made have more than repaid me for the many hours devoted to this Auxiliary."

"The principal objective of the State Auxiliary has been the organization of new County Auxiliaries where the cooperation of the respective Medical Society was assured. In accordance with this policy three new Auxiliaries were formed."

"The development of our educational work is extremely gratifying. We are coming into a realization of our opportunity of educating the laity concerning the promotion of health and in this way are bringing about a better understanding between the public and the medical profession."

"I believe the most important work for the coming year is (1) carrying forward our organization plan, forming new County Auxiliaries, with Junior Auxiliaries in connection with them, increasing memberships in those Auxiliaries already established, and adding many new names to our list of members at large; (2) to have educational programs for Auxiliary meetings and (3) to promote health projects in other women's organizations, (4) to educate ourselves and the laity to the value of *Hygeia*, which is the official voice of the American Medical Association, and (5) to continue to promote friendly understanding through varied social activities."

**Suggestions From the National President.**

Mrs. James Blake, National President, in a letter to the members of the National Board says:

"There is much community work being de-

manded from every one of us these days. And I want to warn every member of this great family of mine, that the advice of your Advisory Board from the Medical Society will help you to keep working along ethical lines. Be sure your work is approved before you *plunge* into new things in the *name* of the Auxiliary. I believe very strongly in a wide Public Relations Policy—for in this field we can do our best work—but we must remember that all organizations fall into four main classifications as I see them—the propaganda group, the technical or professional group, the purely conference group or forum, and the service or classified club group.

"Now I believe one of the functions of the Auxiliary is to develop more trained Auxiliary observers—women who, in an objective manner and with a complete and thorough grasp of Auxiliary philosophy may be able to report on the meeting of mixed groups. In every state and county it should be the purpose of such observers to keep the Auxiliary President in touch with both intellectual and popular movements of all kinds. I sometimes think too many doctors' wives fall into one of two classes when the work of the Auxiliary should be brought into play—brought into the limelight—I mean the defensive Auxiliary member—and the too easily adaptive member. If you will stop to analyze this statement, you will agree with me I am certain.

"I cannot too strongly urge you to study all the program helps and educational material offered by our National Program Chairman, and by our *Hygeia* Magazine, and every State Medical Journal."

### In Memoriam—Mrs. W. P. McDowell.

On Sunday, November 5th, the beloved past president of the Woman's Auxiliary to the Norfolk County Medical Society, Nealey Sylvester McDowell, wife of Dr. Wm. P. McDowell, entered into life eternal. Mrs. McDowell was President-elect of the Woman's Auxiliary to the Medical Society of Virginia, but was forced to resign in 1932 on account of ill health. For more than a year she has been an invalid, yet her cheerfulness and fortitude were an inspiration to all who visited her, and her keen interest in everything that pertained to the welfare of those in need, regardless of race or creed, never wavered. Always active in philanthropic, church, and uplift work of every kind, her unusual ability as an organizer and executive will bear fruit for years to come. Her loss is a personal one for every member of the Auxiliary, and Norfolk is poorer because her hand is no longer active in the many interests she did so much to build up.

# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Gilliland Laboratories
- Staphylococcus Vaccine (Albus and Aureus), 5 c.c. vial.

Mead Johnson & Co.
- Mead's Halibut Liver Oil.
- Mead's Halibut Liver Oil with Viosterol 250 D.

Parke, Davis & Co.
- Parke-Davis Haliver Oil, Plain.

E R. Squibb & Sons
- Autolyzed Liver Concentrate—Squibb
- False Ragweeds Combined Pollen Allergen Solution—Squibb (False Ragweed and Slender Ragweed in equal parts); Orachs (Shadscale) Pollen Allergen Solution—Squibb (Shadscale, Redscale and Wingscale in equal parts); Oregon Ash Pollen Allergen Solution—Squibb; Ragweed Combined Pollen Allergen Solution—Squibb (Giant Ragweed and Dwarf Ragweed in equal parts); Rye Grasses Combined Pollen Allergen Solution—Squibb (Perennial Rye Grass and Italian Rye Grass in equal parts); Sagebrush Combined Pollen Allergen Solution—Squibb (Sagebrush and Pasture Sage in equal parts); Wormwoods Combined Pollen Allergen Solution—Squibb (Biennial Wormwood, Dragon Sagewort, Dark-leaved Mugwort, and Mugwort in equal parts).
- Squibb Stabilized Refined Halibut-Liver Oil.
- Squibb Stabilized Refined Halibut-Liver Oil with Viosterol 250 D.

### PROPAGANDA FOR REFORM

Fortification of Foods Other Than Table Salt with Iodine or Iodine Compounds.—The Committee on Foods reports that the fortification of foods other than table salt with iodine or iodine compounds may lead to excessive iodine intake and endanger public health. Foods so fortified, other than table salt, will not be eligible for acceptance. (Jour. A. M. A., August 5, 1933, p. 448.)

"Health Food" Claims and the Term "Healthful."—The Committee on Foods reports that the term "health food" and equivalent claims or statements to the effect that a food gives or assures "health" are vague, misinformative and misleading. No one food is essential for "health"; there are no "health foods." Statements of well established nutritional physiologic values of foods are permissible. The term "healthful," as used, commonly means that the food described corrects a possible nutritive deficiency or some abnormal condition in such a manner as actively to improve health. It incorrectly implies that the food possesses unique (or unusual) health-giving properties. "Wholesome" indicates that a food so described is sound, clean, fit for consumption and free of any objectionable qualities; it is appropriate for characterizing foods fulfilling these qualifications and should replace "healthful" as used in food advertising. (Jour. A. M. A., August 5, 1933, p. 448.)

# Book Announcements

**Surgery of the Stomach and Duodenum.** By J. SHELTON HORSLEY, M. D., F. A. C. S., LL. D., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. St. Louis. The C. V. Mosby Company. 1933. Octavo of 260 pages with 136 illustrations by Miss Helen Lorraine. Cloth. Price, $7.50.

From its unique and graceful dedication to the quite complete index Dr. Horsley's latest book on the stomach and duodenum is filled with useful information of value to internist and surgeon alike. The first chapter is devoted to the embryology, anatomy, and physiology of the stomach and duodenum with special reference to the motor function, digestion, and absorption; a thorough understanding of which is essential for the correlation of symptoms with the underlying functional or organic lesions discussed in the following three chapters. The fourth chapter is devoted to general considerations of cancer of the stomach. Quoting an investigation by Warwick in which 176 autopsies on gastric carcinomata failed to reveal metastases in 23 per cent of the cases, and a series of 365 deaths from cancer of the stomach collected by Saltzstein and Sandweiss over a period of eighteen months in Detroit, in which resection was attempted in only 7.7 per cent of the cases, a strong argument is presented for surgical treatment in all cases of this condition which show no obvious metastasis.

Unlike Cabot, the author feels that a patient with cancer should never be deceived as to the nature of his lesion. This he sums up by stating, "If the patient does not wish to be informed about his pathologic lesion, brutal truths should not be poured into his ear, but there is equally no reason to withhold the truth if he insists upon knowing it."

The latter half of the book is devoted to operative principles and technique with emphasis on the underlying pathology and physiology involved. This is based largely upon the author's personal experience and numerous case reports with photomicrographs are given to illustrate the indications and contraindications for the various procedures described. Dr. Horsley practices the adage that more is learned from one's failures than one's successes and he emphasizes the dangers of various procedures by frequent references to unfavorable outcomes in his own experience.

The marked variations in size, location and surrounding involvement presented by peptic ulcers sharply limit the type of operation indicated in each individual case. The relative merits of gastro-enterostomy, excision, one of of the various types of pyloroplasty or partial gastrectomy, or a combination of one of these measures with an accessory procedure as occlusion of the pylorus or resection of the branches of the gastric vagus nerves are discussed in detail.

Detailed descriptions are given of the unusual as well as the better known operations on the upper gastro-intestinal tract. As an example of the thoroughness of this work, seven procedures are mentioned in the operative treatment of persistent cardiospasm including the author's operation for this condition. His better known pyloroplasty and modified Billroth I partial gastrectomy are described with the indications limiting their use.

Dr. Horsley does not adopt the usual surgical textbook assumption that every operative procedure is followed by an uneventful convalescence, but devotes considerable space to a thorough discussion of the complications which may arise after gastric and duodenal operations. The treatment of unusual complications, as post-operative duodenal fistula and perforated gastro-jejunal ulcers, is also dealt with in considerable detail.

The author's style is a pleasant one and the book is liberally illustrated by Miss Lorraine's excellent half-tones and pen and ink drawings.

HARRY J. WARTHEN, M. D.

**The Rockefeller Foundation.** Annual Report. 1922. New York. Octavo of 455 pages. Illustrated. Paper.

During 1932 the Rockefeller Foundation appropriated $11,577,064 for projects in the fields of the medical, social, and natural sciences, the humanities, and public health. For public health work the Foundation expended the sum of $2,539,057.15.

In the field of medical sciences, after ten years of concentration on capital aid for buildings and on the endowment of certain medical schools, Foundation emphasis during recent years has shifted to the support of specific research programs. In 1932 special attention was given to the field of psychiatry.

# Virginia Medical Monthly

Founded by Landon B. Edwards, M. D., April, 1874
Owned by Medical Society of Virginia since November, 1919
Wyndham B. Blanton, M. D., *Editor*
Agnes V. Edwards, Richmond, *Business Manager*

PUBLICATION COMMITTEE
Wyndham B. Blanton, M. D., Richmond, *Chairman*
J. H. Neff, M. D., University H. A. Tabb, M. D., Gloucester

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Monthly, 1200 East Clay Street, Richmond, Va.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance. Single Copies 25c.

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# Editorial

**Dr. Brown Resigns.**

The resignation of Alexander G. Brown, Jr., as editor of the Virginia Medical Monthly will occasion general regret among his many friends as well as among the readers of the Monthly. Dr. Brown retires from the duties of editor after fifteen years of devoted work. During the same period he has also held the responsible position of chairman of the Program Committee of the Medical Society of Virginia. The profession of Virginia is under lasting obligation to him for service long and gratuitously bestowed. As editor of the journal he has kept it in the forefront of state society publications. His editorials have been well conceived, timely and instructive. In the conduct of the journal his policies have been broad and constructive. As chairman of the Program Committee he has headed a most important committee of the State Society. Much of the life and vigor of the Society centers in its annual meetings and the character of these meetings is entirely shaped by this committee. Dr. Brown and his committee have managed to give the Society annual programs of a highly interesting and instructive nature.

Dr. Brown, a descendant of the immigrant doctor, Gustavus Brown, of Rose Hill, Md., and a great-great grandson of William Brown, Physician-general in the Continental Army and author of the first American Pharmacopoeia, a graduate of Randolph-Macon College and the University College of Medicine, and until recently clinical professor of medicine in the Medical College of Virginia, became editor of the Monthly in 1919. In assuming the office he became the Society's first editor of its present official organ.

The history of medical journalism in Virginia, the last chapter of which Dr. Brown has so ably written, goes back to the year 1851 when Philip Claiborne Gooch, fresh from study in France and youthful, established the first medical journal in the State—the *Stethoscope and Virginia Medical Gazette*. In 1853 two years before his death in the Norfolk epidemic of yellow fever he disposed of this journal to the Medical Society of Virginia. The name was shortened to the *Stethoscope*, and the recently elected president of the Society, Thomas P. Atkinson, became editor. At the same time a competitive publication came into existence. It was known as the *Virginia Medical and Surgical Journal* and was first edited by George A. Otis afterwards the author of that memorable work *The Medical and Surgical History of the War of the Rebellion*. Hostilities between the two journals ended shortly in a fortunate amalgamation from which the Medical Society of Virginia withdrew not to enter the field of journalism again until 1919. The new publication was called the *Virginia Medical Journal*, and appeared first in 1856 with James B. McCaw as co-editor. In 1856

Dr. Goodridge A. Wilson and R. A. Lewis established still another journal, the *Monthly Stethoscope and Medical Reporter*. Neither of these publications survived the Civil War. The *Confederate States Medical and Surgical Journal*, of which thirteen numbers were issued between 1865 and 1866, was published by Ayres and Wade, of Richmond under the direction of Surgeon-General S. P. Moore.

Shortly after the war (January, 1866) the *Richmond Medical Journal* made its appearance, edited by a rather remarkable man, Edwin S. Gaillard, who before his death had founded four medical periodicals. The new journal claimed in 1867 to be the largest in the United States. Twelve months later when the editor moved to Louisville it ceased to be identified except in name with Virginia. At this time it assumed the new title *The Richmond and Louisville Medical Journal*.

ALEXANDER G. BROWN, JR., M. D.

Three years later (1871) the *Virginia Clinical Record* with J. S. Dorsey Cullen, editor, made its appearance, ran for three volumes and was succeeded by the VIRGINIA MEDICAL MONTHLY which is now in its sixtieth volume. Founded and edited by Landon B. Edwards, the MONTHLY continued as his private venture until his death in 1910. Charles M. Edwards succeeded his father as editor and until 1919 continued to conduct the publication. In that year the Medical Society of Virginia purchased the publication and Alexander G. Brown, Jr., was appointed editor.

During the latter part of this period other medical journals were published in Virginia. In 1878 the *Southern Clinic*, Clarence A. Bryce and J. R. Wheat, editors, appeared. It survived many years. In 1885, John F. Winn founded the short lived *Sanitary Monitor* and in 1886 brought out *Practice*, a spicy little paper which subsequently changed its name to the *Richmond Journal of Practice*. Between 1883 and 1885 the *Atlantic Journal of Medicine*, Robert B. Stover and Henry S. Houston, editors, shared the field with other competitors, all of which were published in Richmond. The *Virginia Medical Advance* (1889), the *Bi-Monthly Bulletin of the University College of Medicine* (1896), and the *Medical Register* (1897) were ephemeral ventures into the same field. The last publication to appear was the *Old Dominion Journal of Medicine and Surgery*, 1902 to 1916, edited successively by Greer Baughman, McCaw Tompkins, and Robert S. Preston.

**The President-Elect.**

For the second time the Medical Society of Virginia has turned to Abingdon for presidential timber. Francis H. Smith, the president-elect, is the grandson of the distinguished first Superintendent of the Virginia Military Institue. He was born at Fairfield, Rockbridge County, Va., April 12, 1881. After taking his A. B. degree at Fredericksburg College in 1899 and his medical degree from the University College of Medicine in Richmond in 1904 he served as resident physician at St. Luke's Hospital, Richmond, and in 1905 entered upon the practice of medicine in Lewisburg, W. Va. In 1910 he moved to Abingdon and since that time has been prominently identified with most of the civic as well as medical activities of that community. He is at present chief of the medical service of the George Ben Johnston Memorial Clinic and the Abingdon Hospital. As a member of the Council of the Medical Society of Virginia from the Ninth District and of the State Board of Medical Examiners and as one of the Society's recent vice-presidents he is already well known to the membership at

large. As president-elect he will head up the important work of the Department of Clinical Education.

**Post-Graduate Education and the State Society.**

The vast and far-flung domain of modern medicine and the extraordinary exertions demanded of the medical profession to keep abreast of developments in it must be apparent from even a casual reading of the twenty-odd reports of officers and committees to the 64th annual meeting of the Medical Society of Virginia. The reports reflect days of strenuous work by the members of many of these committees, and the impression is inescapable that faced with such problems an association like the Medical Society of Virginia can no longer think of itself as functioning only once a year in a convention lasting three days. Its job requires machinery that turns every day in the year.

Of all the various projects before the Society its present educational program easily takes precedence. The future is destined to see it even more in the forefront. Such a program of instruction must be continuous and statewide. The organization for accomplishing it necessarily will become more complicated and expensive, but the ways and means must be found to carry on. Opportunity must be given to every physician in Virginia to see and share in the progress of medicine as it is continually unfolding before us.

Old methods—the maintenance of a state supported medical publication and the holding of annual conventions—are inadequate. Newer methods are already being introduced. The Department of Clinical Education, under succeeding presidents-elect, has now been in operation for four years. So far its accomplishments have been highly satisfactory. While making it clear that it is the servant of the component societies its chief effort has been expended on a two-year program of prenatal and postnatal instruction which has been carried into practically every county in the State. It is gratifying to learn of the favorable impression the Virginia plan has created outside the State—of visits from interested physicians in North Carolina, West Virginia and Tennessee, of inquiries from society officials in Pennsylvania and Indiana, and of an invitation to Dr. J. Allison Hodges to appear before the Maternity Center Association in New York.

It is now proposed to "develop experimentally a program of pediatric teaching" as the next step in the plans of the Department of Clinical Education. For obvious reasons a full-time field clinician is not a part of the plan. The voluntary services of the members of the Pediatric Society of Virginia will be utilized. However devoted and able voluntary service of this character may be it has many drawbacks, and it is no doubt the purpose of those in charge of the Department to return to a full-time worker as soon as the means are available.

While the Society is carrying instruction of this character to the profession of the State another important type of post-graduate teaching is being developed around the State supported medical schools. Many indulge the hope that the day is not far off when those practitioners who wish may return to the medical schools of Virginia for post-graduate courses capable of preparing them for a specialty or of putting them abreast of all the newer methods of medical practice.

# President's Message

**Shall Our Ideals of Medicine Change?**

Today the moorings of the past seem to be slipping. The ideals of many are trending towards socialism. This tendency seems world-wide and the effort is being made from outside and also from inside the profession, it seems, to some extent, to socialize medicine.

It seems that by far the majority of the medical profession at this time is opposed to State medicine, as destructive of the individualism of the doctor, and inimical to the welfare of the public. Now there should be a well-defined line as to where the medical duties of the State should stop, and where the rights of the private practitioner should begin.

In order that the rights of the individual physician should not be interfered with, it is essential that two things be accomplished;

namely, those who have been in practice for years should endeavor to keep up with the advances that are being made in medicine, that are worth while, and there should be thorough organization. Every practicing physician should be a member of his Local and State societies, and should as far as possible attend the meetings, especially of the local society. New books and journals are helpful and attendance at medical meetings is conducive to further study.

By thorough organization, much may be done to curb hostile public sentiment, should such conditions arise. By unity of purpose and thorough organization, a powerful influence may be exerted to check socialistic ideas as applied to medicine, and the welfare of the public in matters pertaining to medicine, may be accomplished successfully without outside influence.

Opportunities for post-graduate instruction and valuable clinics are given for the benefit of the practitioner all over the State. Let all who can help make these educational meetings successful by attending them.

In conclusion, it may be said, that as far as this State is concerned, the Commissioner of Health is working in cooperation with the practitioner, and is doing everything possible not to antagonize his interests but to be of assistance to him.

R. D. Bates, M. D., *President,*
*Medical Society of Virginia.*

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Under a New Chairman.**

Dr. Francis H. Smith, of Abingdon, President-Elect of the Medical Society of Virginia, who in his own words has been "by deliberate choice a rural practitioner for twenty-nine years." becomes by virtue of his office the new Chairman of the Department of Clinical Education. He has already met with members of the Department and reported with approval his observation of the success in Southwest Virginia of the Medical Society's most ambitious program in post-graduate education, that in prenatal and postnatal care conducted by Dr. M. E. Lapham. Dr. Smith has announced his desire that the past policies of the Department be continued. The development of pediatrics courses, as authorized by the Medical Society, he will strive for immediately, and as the next branch of special emphasis he has propsed the field of applied physiology as the basis of all clinical medicine. His advocacy of this subject coincides with that of members of preceding classes who, next to pediatrics, have chosen clinical medicine as their preference for further work.

The assumption by a new President-Elect, the second ranking officer of the Society, of the duty of directing its educational program emphasizes anew the important and significant position which that work has attained among the functions of the Medical Society of Virginia.

**The Department Still Furnishes Speakers.**

Through the invitation of Dr. J. E. Harris, Secretary, the Department of Clinical Education was enabled to contribute to the November 20th program of the Medical Society of Northern Virginia by securing a speaker on a phase of public health, Dr. Kenneth F. Maxcy, Professor of Preventive Medicine and Bacteriology in the University of Virginia. His topic was "Undulant Fever in Virginia." A paper on "Kidney Infections" by Dr. W. H. Toulson, of Baltimore, and reports of clinical cases by members completed the scientific program.

**Short Course in Clifton Forge.**

At least ten members of the Alleghany-Bath County Medical Society have been reported by the Secretary, Dr. R. P. Hawkins, Jr., as prospective members of a group for the study of prenatal and postnatal care. The tentative arrangement is for the Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, Dr. M. E. Lapham, to go directly to Clifton Forge after the close of his work in Danville and complete the ten meetings within the period from December 7th to 20th, inclusive. Circuits of previous courses had unfortunately been so arranged as to prevent the inclusion of Clifton Forge as one of the centers in a ten-weeks' course. Although it is a disadvantage in some cases to attend meetings daily, and although the period of this course

verges upon the holiday season, the interested physicians took advantage of securing Dr. Lapham at a time when he could certainly be available. Their action is one typical of the splendid cooperation which the Joint Committee has received throughout the State in its work.

**Excellent Attendance in the Seventh Circuit.**

The total membership in the seventh circuit of Dr. Lapham's classes since the last report has increased to fifty-seven with the addition of Dr. Wilson in Martinsville, Dr. W. J. Wigington in Chatham, Dr. H. W. Pritchett in Danville, and Dr. Eastlake in South Boston. Thirteen other physicians have visited the classes, and a dozen nurses have also attended as visitors. A most encouraging feature is that all records for regularity of attendance are threatened, and the new circuit promises now to establish a new high. More than four-fifths of the members have been present for every meeting, or an exact attendance rate of 82 per cent. The Martinsville percentage of 79 compares favorably with previous classes, but it is the lowest for this circuit. The colored physicians in Danville have an attendance of 90 per cent, the regular Danville class a mark of 85 per cent, and the South Boston group 84 per cent.

**The Eigthth Circuit on the Peninsula.**

On January 15th the Joint Committee plans for a group of five centers to be established on the Peninsula to comprise the eighth circuit of post-graduate classes in prenatal and postnatal care. The services of Dr. Lapham will be offered to the physicians of the Warwick, Elizabeth City, James City and Mid-Tidewater Societies, and, by their special request, to the (Negro) Richmond Medical Society. Throughout the two years of its work the Joint Committee has attempted to schedule its winter courses in the more temperate sections of the State, Dr. Lapham having last winter visited the South-Tidewater section in Norfolk and vicinity.

**The Ninth Circuit in the Shenandoah Valley.**

For the group of classes in prenatal and postnatal care to comprise the ninth circuit of centers extending from Harrisonburg north, the Rockingham County Medical Society, through its President, Dr. N. M. Canter, has already undertaken the formation of a group. The only other organized society involved is the Medical Society of Northern Virginia, covering six counties, which voted at its meeting on November 20th to approve the organization of classes. Tentative arrangments are for the courses to be held in Harrisonburg, Luray, Front Royal, Woodstock and Winchester.

**Future Courses.**

At Lynchburg the Medical Society of Virginia for the third time unanimously approved an appropriation for carrying on the courses in prenatal and postnatal care, the sum being allowed for the five months from May through September for the completion of the program in every section of the State. In the words of Dr. G. F. Simpson, of Loudoun County, upon whose motion the appropriation was passed, it was a matter of "simple justice" to provide for the counties yet unserved the same opportunities already afforded to the majority of the counties of the State. During the five months' period the Joint Committee will undertake to arrange courses wherever they are desired in the northeastern corner of the State. Ten classes may be established in the tier of about eighteen counties. The location of the classes is subject to the desires of the physicians themselves as, indeed, is the very formation of the class, since the endorsement of the local society is required as always in the past before the Joint Committee undertakes the organization of a course.

**By Way of Appreciation.**

Rich compensation for their many hours of past work came to the members of the Joint Committee on the evening of November 15th when Drs. Lee E. Sutton, Jr., and Warren F. Draper gave a dinner in Richmond in honor of Mr. Barry C. Smith and Miss Barbara S. Quin, Director and Assistant Director of the Commonwealth Fund, the agency whose understanding and stimulating support made possible the work of the Joint Committee. Besides the guests of honor, twelve others, including the President of the Medical Society, the President-Elect and three past Presidents, joined in expressing their appreciation of the educational accomplishments of the Medical Society of Virginia.

George W. Eutsler,
*Executive Secretary, Department of Clinical Education, Secretary, Joint Committee.*

# Proceedings of Societies

**The Fauquier County Medical Society**

Held an "On to Lynchburg" meeting on October 13th, at the residence of Dr. J. Elwood Knight, Warrenton, Va., with Dr. Knight and Dr. M. B. Hiden as joint hosts.

The meeting was called to order by Dr. John T. Sprague, President of the Society. There were thirty-one physicians present, representing Alexandria city, and Arlington, Fairfax, Loudoun, Prince William, Fauquier, Culpeper, and Rappahannock counties.

Dr. J. E. Knight made a very delightful speech of welcome. Dr. J. T. Sprague responded to this in his usual humorous fashion.

On motion all of the present officers were unanimously re-elected as follows: President of the Fauquier County Medical Society and Chief of Staff of the Fauquier County Hospital, Dr. John T. Sprague, Warrenton; first vice-president and Associate Chief of Staff, Dr. Vaden L. McCullers, Remington; second vice-president and Associate Chief of Staff, Dr. Stewart McBryde, Manassas; treasurer, Dr. Henry L. Townsend, Marshall; and secretary, Dr. M. B. Hiden, Warrenton.

The Society voted unanimously to recommend to the State Society to do everything possible to induce Congress to give certain officers now in the United States Army, who served on the Panama Canal during its construction, certain privileges and slightly increased compensations.

The Society also unanimously instructed their delegate to do all possible to induce the State Society to use its influence with the State Legislature to change the law so that physicians would not be required to testify in court for 40c a day. All felt strongly that professional testimony should be valued more highly than the testimony of the most ignorant and most unreliable lay witness.

In order that the delegates from the local Society should know the wishes of the individual members, the following subjects were discussed: the Cost of Medical Care and State Medicine; the Federal Relief Administration; and the vaccination of school children.

The doctors then adjourned to spend several hours in a social way and to enjoy a most delicious supper served by Dr. and Mrs. Knight.

M. B. Hiden,
*Secretary.*

**Southwestern Virginia Medical Society.**

At the business session of this Society in Wytheville, recently, the following officers were elected for the coming year: President, Dr. E. M. Chitwood, Wytheville; vice-president, Dr. Beverley F. Eckles, Galax; secretary-treasurer, Dr. H. W. Bachman (re-elected), Bristol. Dr. J. A. Noblin, East Radford, was elected a member of the executive committee to succed Dr. J. D. Willis, Roanoke, so that the executive committee is now composed of Dr. A. B. Greiner, chairman, Rural Retreat; Dr. W. K. Lloyd, Christiansburg, and Dr. J. A. Noblin, East Radford. Dr. Harloe Bailey, Rural Retreat, was elected to membership in the Society.

# News Notes

**Our New Editor.**

Dr. Wyndham B. Blanton, who succeeds Dr. Alexander G. Brown, Jr., as editor of the Monthly, has expressed our regret on the resignation of Dr. Brown. As the editorial department is in Dr. Blanton's hands, however, we are using the News columns to say we feel we are most fortunate in having secured Dr. Blanton as Dr. Brown's successor. Dr. Blanton hardly needs an introduction to our readers as he has already achieved distinction as chairman of the Committee on History of Medicine in Virginia and we owe him a debt of gratitude for the wonderful work he has accomplished in publishing three volumes on our State medical history.

We wish Dr. Blanton success in this new field.

**Lynchburg Meeting, Medical Society of Virginia.**

The meeting of the State Society, recently

held in Lynchburg, under the presidency of Dr. J. C. Flippin, of the University of Virginia, was interesting throughout and the Society owes the Local Committee of Arrangements a vote of thanks for the manner in which they handled all affairs. There was a registered attendance of five hundred and ten including one hundred ladies.

Excellent clinics were held on the afternoon of the first day by Dr. Dean Lewis and Dr. Louis Hamman, both of Baltimore, who also gave excellent addresses at the evening session. The remainder of the scientific program and the sessions of the House of Delegates proved most interesting.

One action of the House of Delegates was an appropriation of $1.500.00 for a continuance of prenatal and postnatal instruction, upon completion of the second year's work, in order that all sections of the State desiring it might have advantage of this course.

The House also went on record as disapproving the plan proposed by Federal Emergency Relief Administration for the compensation of physicians on a fee schedule basis for the care of indigent sick, but recommended that the various county medical societies cooperate with their local relief agencies in working out suitable plans for the medical and surgical care of these cases without charge for services rendered.

Dr. R. D. Bates, Newtown, was installed as president for the coming year. Other officers are: President-elect, Dr. F. H. Smith, Abingdon; vice-presidents, Drs. Hugh H. Trout, Roanoke, B. B. Dutton, Winchester, and J. K. Hall, Richmond; executive secretary-treasurer, Miss Agnes V. Edwards, Richmond.

Alexandria was selected as the 1934 place of meeting.

**Virginia Pediatric Society.**

This Society held its annual meeting on October 25th, in Lynchburg, Va., on the second day of the State Society meeting, under the presidency of Dr. James B. Stone, of Richmond. This was a luncheon meeting and the guest speaker was Dr. James A. Lyon, of Washington, D. C. His subject was Rheumatic Heart Diseases in Children. Officers elected for the ensuing year are: President, Dr. Thomas D. Jones, Richmond; vice-president, Dr. Roger H. DuBose, Roanoke; and secretary-treasurer, Dr. W. Ambrose McGee, Richmond.

**The Southern Medical Association**

Held a most successful meeting in Richmond, Va., November 14th-17th, under the presidency of Dr. Irvin Abell, Louisville, Ky. The total registration of 2.298 included 1,664 physicians, 358 ladies, and 276 medical students.

Officers elected for the ensuing year are: President, Dr. H. Leslie Moore, Dallas, Texas; first vice-president, Dr. Fred M. Hodges, Richmond, Va., and second vice-president, Dr. Thomas A. Groover, Washington, D. C. The term of Mr. C. P. Loranz, secretary-manager, of Birmingham, Ala., does not expire until 1936, and Dr. M. Y. Dabney, editor of the Journal, will hold over for another year. Dr. Seale Harris, Birmingham, was elected chairman of the Board of Trustees, succeeding Dr. J. Shelton Horsley, Richmond; and the new chairman of the Council for 1934 is Dr. Frank K. Boland, of Atlanta, Ga. San Antonio, Texas, was selected as the convention city for 1934.

Among the officers elected for the different sections, Dr. Wm. B. Porter, Richmond, was named secretary of the Section on Medicine; and Dr. G. F. McGinnes, Richmond, secretary-treasurer of the Southern branch of the American Public Health Association.

Dr. William deB. MacNider, professor of pharmacology at the University of North Carolina, was awarded the Association's medal for outstanding achievements in original research. Dr. Glenville Giddings, of Atlanta, Ga., received the first award for scientific exhibits, and Dr. George B. Lawson, Roanoke, and Drs. Harvey B. Haag and J. D. Woodley, Richmond, were among those to receive honorable mention.

Mrs. Southgate Leigh, Norfolk, Va., was installed as the President of the Woman's Auxiliary to the Southern Medical Association.

Other meetings held in conjunction with the Southern Medical Association were the American Society of Tropical Medicine, the National Malarial Committee, the American Public Health Association (Southern Branch), the Society for Experimental Biology and Medicine, the Southern Section and Southern Association of Anaesthetists, and the Association of Women Physicians to the Southern Medical Association.

**The Seaboard Medical Association of Virginia and North Carolina**

Is holding its annual meeting in Norfolk, Va., December 5th, 6th, and 7th, with headquarters at the Monticello Hotel. Dr. William P. McDowell, Norfolk, is president, and Dr. Clarence Porter Jones, Newport News, secretary. A most excellent program has been prepared. In addition to volunteer papers, there will be a symposium on the Heart with Dr. Wm. B. Porter, invited guest of Richmond, reading one of the papers in this set, and also addresses on medical subjects by Dr. Walter E. Dandy and Dr. Louis V. Hamman, invited guests from Baltimore. Following the meeting, there will be an oyster roast for the members and visitors.

**Dr. Charles W. Putney,**

Who, for the past ten years has been specializing in surgery and gynecology in Staunton, Va., closed his offices in that place on November 1st and is spending some time visiting clinics in New York and Philadelphia. After January 1st, he will be located in West End Medical Building, 2618 Grove Avenue, Richmond, Va., for the practice of general surgery.

**Dr. H. Cantor,**

Petersburg, Va., recently attended the sixth annual graduate fortnight of the New York Academy of Medicine.

**News Notes from Medical College of Virginia.**

Dr. W. T. Sanger, president, and Dr. Lee E. Sutton, Jr., dean of the school of medicine, attended the annual meeting of the Medical Society of Virginia in Lynchburg, October 24th-26th. Members of the college staff having exhibits and papers on the program were as follows: Dr. W. Ambrose McGee, Dr. W. R. Bond, Dr. C. C. Coleman, Dr. Manfred Call, Dr. William B. Porter, Dr. W. H. Higgins, Dr. G. Paul LaRoque, Dr. I. A. Bigger, Dr. Frank S. Johns, Dr. Beverley R. Tucker, Dr. Thomas W. Murrell, Dr. A. Stephens Graham and Dr. Austin I. Dodson.

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Dr. Sidney S. Negus, professor of chemistry, attended the annual convention of the Association of Dairymen of Pennsylvania and New Jersey at Harrisburg, Penna., recently. While on this trip Dr. Negus also addressed the student body of Mercersburg Academy, Mercersburg, Penna.

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During the month of October 5,883 patient visits were made to the outpatient department of the college. This represents a gain of 735 over the same month of last year. The average number of patients handled a day in the clinic was 226 with a maximum day of 277.

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Dr. Frank L. Apperly, professor of pathology, attended the meeting of the Southern pathologists at Durham which preceded the meetings of the Southern Medical Association, November 14th-17th.

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Dr. W. S. Leathers, dean of the school of medicine, Vanderbilt University, addressed the senior class on November 15th. Dr. Leathers was in the city atending the Southern Medical Association.

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Rear Admiral P. S. Rossiter, Surgeon-General, United States Navy, was a visitor to the college November 15th.

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The monthly faculty and staff meeting was held at Cabaniss Hall Thursday, November 9th. The following papers were given: Some Interesting Advances in Cancer Research by Dr. E. C. L. Miller with discussion opened by Dr. J. Shelton Horsley. Duodenitis by Dr. Oscar Hite with discussion opened by Dr. T. Neill Barnett. Surgical Clinics in Germany by Dr. Harry Warthen.

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Dr. William T. McClosky, senior pharmacist, Food and Drugs Administration, United States Department of Agriculture, was the recent guest of the pharmacology department of the college.

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The alumni association of the college, which for some time has had its rooms in the basement of McGuire Hall, has new quarters on the first floor, in the room which was used as the library before that was moved to its commodious new quarters across the street.

**News from University of Virginia, Department of Medicine.**

At the meeting of the University Medical Society on October 9th, Dr. E. P. Lehman spoke on the subject Vasospastic Syndromes of the Extremities; Dr. C. B. Morton spoke on Duodenitis following Experimental Narrowing of the Pylorus.

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Dr. Frederick Coutelen, lecturer in Parasitology at the Institute of Colonial Medicine in Paris, visited the Medical School on October 24th.

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On October 30th, Dr. F. W. Stewart, of the Memorial Hospital in New York, spoke before the University Medical Society on the subject of Hodgkin's Disease.

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Dr. Johannes Bauer, of the Yellow Fever Research Laboratory of the International Health Division of the Rockefeller Foundation, visited the Medical School on November 3rd.

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On October 10th, Dr. Edwin Wood spoke before the Post-Graduate Society of Southern Virginia at Petersburg on the subject of Cardiac Emergencies, Genuine and Spurious.

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On November 13th, Dr. Kenneth Maxcy spoke on Undulant Fever before the Medical Society of Northern Virginia at Front Royal.

**News Notes from Duke University School of Medicine and Duke Hospital.**

On November 4th, two surgical clinics were given at the Duke Hospital, by Dr. G. C. Weil, Surgeon-in-chief, Mercy Hospital, Pittsburgh, Penna., on Fractures of the Pelvis, and by Dr. C. C. Coleman, of Richmond, Va., on Fractures of the Spine Associated with Injury of the Spinal Cord.

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On November 14th, Dr. T. B. Sellers, of New Orleans, held a gynecological clinic, and Dr. E. L. King, of New Orleans, gave a clinic on the Treatment of Pelvic Infections.

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On November 18th, Dr. C. R. Murray, Associate Professor of Surgery, in charge of the Bone and Joint Division, at the Columbia University School of Medicine and the Presbyterian Medical Center, gave a clinic on Fractures, and Dr. Alexander Schaffer, of Baltimore, gave a clinic on Tuberculosis in Children.

**Christmas Gifts for Doctors.**

Are you looking for a nice gift for some doctor friend? If so, why not place your order through the office of the Medical Society of Virginia for one or more volumes of History of Medicine in Virginia? The third volume is now on press and will be ready for delivery in time for Christmas. This brings the history of medicine to the beginning of the present century so that it will tell of people and things with which we are all more or less familiar. The three volumes treat of medicine in the seventeenth, eighteenth and nineteenth centuris, respectively, but each is separate and distinct.

Why not treat yourself to these books?

**Christmas Seal Sale.**

The twenty-seventh annual Christmas seal sale will be held this month. There will be 2,084 affiliated tuberculosis associations participating in this sale.

Christmas seals finance a nation-wide program of free tuberculosis clinics, tuberculin testing, X-rays, nursing service, education and other activities. The Christmas spirit is today expressed by the millions who purchase Christmas seals—the penny stickers that fight tuberculosis. Your pennies will help prevent, find and cure tuberculosis throughout the year.

Every county and city in Virginia has its tuberculosis organization, and the Virginia Tuberculosis Association has already distributed over 24,000,000 Christmas seals for sale. These local organizations are calling for more seals and are working hard to secure greater returns in order to answer the increased cost for aid for the indigent tuberculosis patients in their community.

**American College of Surgeons.**

In the November issue of the Monthly, we gave names of new officers of the American College of Surgeons, but by some kink of the mind, stated that Dr. Squier succeeded Dr. Wm. D. Haggard as president. It should have been the "other way round" as Dr. Haggard, of Nashville, Tenn., is this year's president. The other officers are as stated.

There were over six hundred candidates elected to fellowship this year, those from Virginia being: Dr. Benjamin A. Doggett, Norfolk; Dr. Thomas G. Hardy, Farmville; Dr. Charles R. Irving, Saltville; Dr. Marcellus A. Johnson, Jr., Roanoke; Dr. Arthur M. Smith, Jr., Charlottesville; and Dr. Tiffany Johns Williams, University.

**Married.**

Dr. Roger L. Creekmur Richmond, Va., and Miss Frances Irene Mitchell, of Stanardsville and Richmond, October 21st.

Dr. S. Edwin Hughes, Jr., formerly of Danville, Va., but for the past three years con-

nected with the health department of Los Angeles, Calif., and Mrs. Willa Mae Davidson, also of Los Angeles, November 3rd.

Dr. Jesse McCall, Tazewell, Va. of the class of '31, Medical College of Virginia, and Miss Louise Richardson Pregnall, Richmond, November 18th.

Dr. Paul T. McBee, Bakersville, N. C., class of '30, Medical College of Virginia, and Miss Ivy Sandy, Burkeville Va., October 25th.

Dr. Arthur S. Jones, Hunington, W. Va., and Miss Fanny Harrison Mills, Russellville, Ky., October 11th. Dr. Jones is an alumnus of the University of Virginia Department of Medicine.

Dr. Alexander N. Chaffin, of the class of '29, Medical College of Virginia, who later interned at hospitals in Richmond, and Miss Louise Keever, September 7, 1932. They are now making their home at Rural Retreat, Va., where Dr. Chaffin is engaged in general practice.

**Dr. Charles W. Scott,**

Tuberculosis clinician with the State Department of Health for nine years, announces that he has opened offices at 103 North King Street, Hampton, Va. His practice will be limited to internal medicine with special reference to diseases of the chest.

**Dr. Hugh H. Trout,**

Of Jefferson Hospital, Roanoke, Va., was a guest of honor of the Texas Surgical Association at a recent meeting in Fort Worth. Dr. Trout also gave clinics at Temple, Texas; University of Texas, Galveston; and Tulane University, New Orleans.

**Dr. Bell Resigns Post at Epileptic Colony.**

Because of ill health, Dr. John H. Bell tendered his resignation as superintendent of the State Colony for Epileptics and Feebleminded, the middle of October, and Dr. G. B. Arnold, first assistant physician, has been appointed acting superintendent.

**Dr. J. E. Tilman,**

Formerly of Rock Castle, Va., has located at Powhatan, Va., where he is engaged in general practice.

**Association of American Medical Colleges.**

At the meeting of this Association, October 31st and November 1st, in Rochester and Minneapolis, Minn., Dr. Ross V. Patterson, of Jefferson Medical College, Philadelphia, was elected president for the ensuing year, and Dr. Charles W. Poynter, Omaha, was elected vice-president. Dr. Fred C. Zapffe, Chicago, was re-elected secretary. The next meeting of the Association will be held in Nashville, Tenn., in October, 1934.

**The New York Polyclinic Medical School and Hospital**

Announces that on December 6th, at 3:30 P. M., Dr. Herman Schwarz will give a lecture on "Nutrition in Infants."

Members of the medical profession are invited to attend.

**Dr. Robert H. Wright, Jr.,**

Of the University of Pennsylvania, class of '29, is located in Phoebus, Va., where he is engaged in general practice.

**Dr. John H. Allen,**

U. S. A., M. C., who has been on duty for sometime with the Eightieth Division of Reserves at Richmond, Va., has been retired because of physical disability incurred in line of duty.

**Dr. James Porter Baker, Jr.,**

Of the University of Virginia, class of '29, recently associate Research Fellow of the Thorndike Memorial Hospital, Boston, Mass., has opened offices at 600 Medical Arts Building, Richmond, Va., where he will be engaged in the practice of internal medicine.

**Interstate Post-Graduate Medical Association of North America.**

At the recent meeting of this Association, Dr. John M. T. Finney, Baltimore, was installed as president, and Dr. Charles H. Mayo, Rochester, Minn., was named president-elect.

**The American Association for the Study of Goiter,**

For the fifth time, offers three hundred dollars as a first award, and two honorable mentions for the best essays based upon original research work on any phase of goiter to be presented at their annual meeting in Cleveland, Ohio, June 7, 8, and 9, 1934.

Competing manuscripts must be in English, and submitted to the Corresponding Secretary, J. R. Yung, M. D., 670 Cherry St., Terre Haute, Ind., not later than April 1, 1934.

**Amebic Dysentery Epidemic.**

A startling number of cases of amebic dysentery have been reported from all sections of the country and the source of these is probably

traceable to a visit to Chicago between May and November of this year. Data received from these cases traced back to a certain hotel in Chicago, and investigation disclosed that more than 25 per cent of the food handlers of this hotel were found to be infested with Endamoeba histolytica. Of 22,000 questionnaires sent to the guests of this hotel, during the time mentioned, approximately 3,490 replies were received. Of this number, 180 reported illnesses—sixty-nine were positively diagnosed and twenty-three were reported as suspected of having amebic dysentery. It has been found that cases are almost invariably being wrongly diagnosed and many of them have surgical operations which end fatally.

Further reports of this epidemic may be obtained from the November 18th issue of the *Journal of the American Medical Association.*

### New Medical Building at Wake Forest.

A new building, known as the William A. Johnson Memorial Medical Building, was recently completed and turned over to Wake Forest (N. C.) College School of Medicine. It is a gift of the family of Dr. William A. Johnson, who was killed in an automobile accident several years ago. Dr. Johnson received his academic degree at Wake Forest and was professor of anatomy in that Medical School at the time of his death.

### Take it With a Smile!

As evidence of the fine spirit in which our members have received and paid statements, we recently received the following verses with a check for the current year's dues:

My delay you'll please excuse
And receive the current dues
Sent herein.
There have been some cuts in pay.
Charge to this the long delay—
Lack of tin.

It would be fine to hear from other members—with or without verses.

### For Sale.

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# Obituary Record

**Dr. Lilburn Walter Huddle,**

Rural Retreat, Va., at which place he had practiced for twenty-five years, died suddenly on October 1st, as a result of intracranial hemorrhage. He was 54 years of age and a graduate in medicine from Lincoln Memorial University, Knoxville, Tenn., in 1907. Dr. Huddle was a member of the Southwestern Virginia Medical Society and had also been a member of the State Society for some years. His wife and two sons survive him.

**Dr. Benjamin Franklin Iden,**

Manassas, Va., died at a hospital in Washington, D. C., on September 22nd, as the result of an injury received when kicked by a horse. He was born in Warren County, Virginia, 89 years ago and received his medical education at Washington University, Baltimore, from which he graduated in 1872. He had been a member of the Medical Society of Virginia since that same year.

**Dr. Arthur Wellington Rusmiselle,**

Washington, D. C., died October 3rd, of nephritis. He was 84 years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1877. Dr. Rusmiselle formerly practiced in Loudoun County, Virginia, and had been a member of the Medical Society of Virginia for some years.

**Dr. Edward Bentley Cox,**

Louisville, Ky., died October 27th, following an operation for appendicitis. He was 31 years of age and a graduate of the University of Virginia, School of Medicine, in 1927.

**Dr. Marcus T. Hickman,**

Hudson, N. C., a member of the class of 1909, former University College of Medicine, Richmond, Va., died September 18th as the result of a ruptured appendix. He was 51 years of age and a member of the Medical Society of the State of North Carolina.

**Dr. Elbert W. Ross**

Died at his home in Sugar Grove, Va., November 5th, after a short illness. He was 67 years of age and is survived by his wife and several children.

**Professor Albert Calmette,**

French bacteriologist, widely known in the field of preventive medicine, died October 29th of an abdominal ailment. He was 70 years of age. Since 1927 he had been an assistant director of the Pasteur Institute in Paris.

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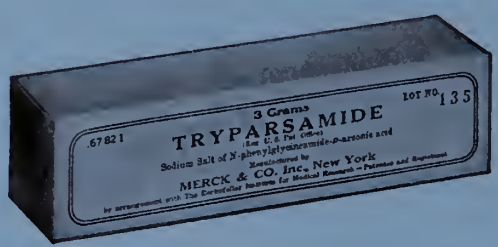


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## A MENTAL HYGIENE PROGRAM IN THE MAKING.*

WILLIAM F. DREWRY, M. D., Richmond, Va.
Director, Bureau of Mental Hygiene, State Department of Public Welfare.

"By mental hygiene we mean," says Dr. Henry B. Elkind, president of the Massachusetts Mental Hygiene Society, "the wisest application of psychiatry and psychology to the solution, improvement and prevention of social problems, particularly of mental disease, disorder and defect." The prevention of mental disease or inadequacy, the preservation of mental health and the building up of the mind to the highest standard of efficiency are, in the words of Dr. James K. Hall, of Richmond, Va., the important objectives of mental hygiene. "By normal mind," we mean, says another authority, "the nearest approach to a state of mind in which one may achieve maximum efficiency and greatest happiness unhampered by habits and attitudes toward life that lead to varying degrees of failure." To provide for the mental misfits adequate provision in suitable schools, and to keep individuals out of psychopathic, correctional or penal institutions are practical aims of mental hygiene.

Mental hygiene as an organized movement was initiated about a quarter of a century ago. At first it was concerned more especially with the improvement of hospitals for the mentally sick so as to increase the recovery rate by quickening psychiatric research and thereby bringing about more effective treatment. But in recent years it has extended its activities outside of mental institutions to borderline mental states, behavior problems, the operation of child guidance and neuropsychiatric clinics. These and other methods by which the medical profession and the public generally would be correctly informed relative to the causes, prevention, symptoms and treatment of mental sickness and mental deficiency have been and are being gradually developed. The medical profession has been assuming its responsibility for leadership in promoting prevention of mental disorders and directing and aiding the individual, families, schools, social welfare and other agencies and organizations in developing sound mental health with its various attributes.

The school is the natural center for promoting mental as well as physical health. In every modern educational program mental hygiene should have an important place. Certainly it should be closely identified especially with the educational training of the younger child and the adolescent. It has been stated by so eminent an authority as Dr. C. M. Hincks, Chairman of the National Committee for Mental Hygiene, that "4 per cent of all the school children in this country, if nothing is done in the way of prevention, will at some time in their lives become insane." It is clear that physical and mental hygiene are closely allied in dealing with the school child as well as every other individual, especially in the days of youth.

Relative to a state Mental Hygiene program, it was recently stated by Drs. A. Allen Jackson and Horace Victor Pike (in the *Pennsylvania Mental Hygiene Bulletin*, about the program of Pennsylvania, which is more or less similar to those of other states) that "Mental Hygiene, while not a new term, as we understand it today, represents an organized effort to promote normal mental health, to prevent mental disease and mental defect, and adequately provide especially for the early study and treatment of these conditions when present, to the end that individuals may live more happily adjusted lives and a high type of citizenship be maintained." . . . That "an effective state program of mental hygiene demands (1) Adequate institutional facilities; (2) Provision in communities throughout the state for clinical examination of individuals who, as a result of abnormal mental functioning, are experiencing difficulties in the matter of social adjustment, . . . problems in the home, the school or the community at large;

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

(3) Persistent, intensive, systematic education of the public at large as to the causes and methods of prevention of mental disease and mental defect, as well as the early recognition and treatment of the conditions."

Since this association of Virginia physicians has, through its special committee on mental hygiene, given support to the efforts of the State Bureau of Mental Hygiene (a branch of the Department of Public Welfare), thereby linking up the organized mental hygiene movement in the state with medical organizations, it seems pertinent that I present to you in summary form an outline of the efforts and accomplishments of the Bureau and its clinics, during their operation over a period of less than five years, and consider briefly future development.

Three thousand one hundred and forty-nine (3,149)* individuals have been personally studied at the clinics. During the past fiscal year the number was 594. Most of the patients have been luckless children or youths, handicapped through no fault of their own by bad heredity, unfavorable social environment, poverty or diseased physical conditions, or by mental inferiority. The personnel of the clinic staff, which is too limited, consists of a director and psychiatrist, a pediatrician, a psychologist, a psychiatric social worker, a laboratory technician, a trained nurse and clerical help, each especially trained. Their work along physical lines is supplemented materially by the several out-patient clinics of the Medical College of Virginia and by several individual physicians. The Mental Hygiene Bureau aims to cooperate with the physicians of the state and to help them in a difficult field of prevention.

In connection with the study of the patients referred by the juvenile courts, physicans, parents or guardians, orphanages, schools and other agencies, many are without adequate family and personal histories, so essential in the study and treatment of cases. Other than those committed by the courts, no case is examined at the clinic unless it has been referred by a physician. Unfavorable heredity, unwholesome environment, domestic discord, injurious personal habits and physical disorders are factors that have varying degrees of causation of the emotional or mental disturbances, delinquencies and crimes with which the mental clinic deals. For the reason, however, that lack of complete family and personal histories is frequently a handicap to adequate study and appropriate treatment, there is need by every juvenile court of the services of social workers who have had psychiatric training; a psychiatrist is preferable. The juvenile courts in Norfolk, Richmond and other cities have such services, but far too limited. Experience has demonstrated that it would be wiser if there were attached to every court adequate psychiatric service. Certainly in every reformatory and every penal institution of a graver sort the occupants should have the advantage of adequate psychiatric services, for many of the residents of such institutions are more in the need of a psychiatrist than of a guard. In a number of cases in criminal courts members of the Mental Hygiene staff have rendered expert service.

Patients are sent or brought to the clinic because of deviation from accepted normal behavior, varying from truancy to serious crimes against property or persons, including arsons and homicide, etc., or from some damaging habits or a simple nervous disturbance to a definite mental defect or disorder. Besides the cases systematically studied by the clinic staff and aided through the several clinics of the Medical College of Virginia, or the medical school of the University, a number of others have been given mental hygiene and psychiatric advice and appropriate treatment, or referred to individual specialists for needed diagnosis and treatment. Mental hygiene clinics other than those of the State Bureau of Mental Hygiene are the Children's Memorial Clinic, in Richmond, a child guidance clinic, and the psychiatric demonstration clinic of the medical department of the University of Virginia, both of which are well organized and do efficient service. Furthermore, psychiatric clinics are conducted by the State Mental Hospitals on occasions of meetings of medical societies. The closer the relation between the mental hospitals and the extra-institutional mental clinics under state supervision, the better the objectives of mental hygiene can be accomplished.

On account of inadequacy of state hospital or colony provision, comparatively few of the feebleminded and the youthful mental cases studied at the clinic have been received in the state institutions for these respective classes. Consequently practically all the feebleminded white and colored boys have been sent to the

*December 1, 1933, number had reached 3,249.

industrial schools. Many of these are ultimately sent back into the communities. Of 318 colored boys definitely feebleminded that have been studied at the clinic up to this time, 179 were sent to the industrial school. Comparatively few of the feebleminded white children have been received into the state colony. The legislature does not seem to have recognized its responsibility to the feebleminded.

Incipient symptoms of a definite mental disorder have been observed in a number of children and youths that have been referred to the clinic, and there are doubtless many others in families throughout the state that have never reached any mental clinic. If they are not helped early they will probably later become, especially under stress or adverse circumstances, greater problems and consequently add further burden and cost to society and the state. The records of the mental hygiene board of the penitentiary bear out this fact. A most important chapter in mental hygiene can be written on the inmates of the state prison.

Eugenic sterilization has received so much attention throughout the country that it is well to point out that the State Hospitals of Virginia have in recent years done excellent work along this line, the results of which in reducing mental disorders will be seen in later years. Similiar service would find a field in the large number of appropriate cases in the industrial schools and in the state prison and elsewhere. It is of interest that up to July last, 1,444 feebleminded and psychotic cases in the state hospitals had been sterilized. This service might well be extended to defectives outside of state institutions.

In Virginia's five public institutions, four for white and one for colored mentally sick, mentally defective and epileptic—there were, July 1, 1933, 8,312 patients; on visit home 2,632, or a total of 10,944. Since January 1923, or in ten and a half years, the increase in the number of the above cases, under the state's care has been about 30 per cent. Besides the public institutions doing creditable work in spite of financial and other handicaps, there are in the state three private sanatoria and a school for the feebleminded, all well conducted. A large number of patients furloughed from state hospitals do not receive adequate care in homes, consequently many of them return to the mental hospitals for further care. It has been repeatedly demonstrated in various states, but not in Virginia, that the services of the psychiatrically trained social worker under such circumstances have proven to be a valuable asset to any mental hygiene program. The extensino of such services would aid in spreading mental hygiene knowledge.

The total public revenue of Virginia the past fiscal year was $43,431,645.23. Of this amount $1,450,661.26, or 3.34 per cent, was expended for the institutional care of the mental patients above enumerated. The cost of organized state mental hygiene, or the Bureau of Mental Hygiene and its clinic service, last year amounted to only $10,223.80, out of which are paid salaries of five full-time and three part-time members of the staff. The outside source of income of the Bureau and the clinic was discontinued about three years ago, necessitating material reduction in the staff and in the discontinuation, temporarily I hope, of mobile clinics in three cities. These clinics should be re-established and others established. These conditions have come about at a time of economic stress when mental hygiene activities are most needed to help mental disease and juvenile delinquency from becoming increasing public problems, following especially the depression. Compare the above figures with those of Massachusetts where 14.2 per cent of the total expenditures of $11,175,755.75 by the Department of Mental Diseases for 1932 and about $50,000 was spent by state institutions on mental hygiene clinics. The percentage of Connecticut revenues expended during the last fiscal year for the care of the insane, epileptic and feebleminded was 8.14 per cent. In no other southern state is the per cent of public revenue expended for the insane, feebleminded and epilepsy so small as in Virginia where state care was first established in 1769, at Williamsburg.

Your committee on mental hygiene has embraced in its report to the House of Delegates some of the most important objectives to which the organized mental hygiene movement in the state should direct its efforts, namely: Continuation of the educational program of mental hygiene. This feature has been carried on by addresses and publications by many of the leading psychiatrists and other physicians of the state and some from without the state; and our state medical journal has been of ma-

terial help in promoting the educational phase. The expansion of clinic service, so as to embrace practically the entire state, is clearly implied in your committee's report, as is also removal of the definitely feebleminded from the industrial schools to appropriate institutions. Several hundred such cases have, as above mentioned, been thus placed because the state had not provided adequate room at the colonies for the feebleminded. Separate institutional care for mentally disturbed or psychotic children, apart from institutions for adults, is wisely recommended. There are many such cases in mental institutions for adults, in the industrial schools, in foster homes and elsewhere.

The establishment of psychiatric pavilions at each of the medical schools is a most important recommendation. This is in the interest of early treatment and the better clinical teaching of mental disorders to medical students, or research, and for special training in mental nursing. This step would bring about a closer integration of clinical psychiatry with general medicine. Such institutions are in successful operation in this country and Canada.

The needed expansion of the work of the Bureau of Mental Hygiene should, your committee wisely advises, be supported by adequate legislative appropriation. The forward-looking attitude of your committee merits the support of every member of this Society and all other individuals who are concerned in the prevention of mental disorders and of delinquency and the development of a mentally healthy citizenship.

I have outlined in a cursory manner some of the important features of a State Mental Hygiene program. There are, however, other features that demand equally thoughtful consideration by the medical profession and others, if adequate solution of the problems of mental disease, inadequacy, and delinquency and crime are ever to be satisfactorily solved.

In several other states mental hygiene programs are being developed into means of great usefulness in promoting mental health and will doubtless lead to reduction in mental disorder and its consequences. Why not in Virginia?

---

The following resolution presented by the Committee on Mental Hygiene at the Lynchburg meeting of the Medical Society of Virginia, was adopted by its House of Delegates:

"That the legislative committee of the Society contact the proper committee of the legislature to see if an adequate appropriation can be obtained for the purpose of carrying on and expanding the work of the Bureau of Mental Hygiene."

Discussion

Dr. David C. Wilson, University: This is a subject that I am so full of that I really should like to talk quite a good while on it. I should like to talk for the first half hour on Dr. Drewry and his clinic. As I have time to say just a few words, I want to get over about three or four things, if I can, in the discussion of the paper and say perhaps some of the things that Dr. Drewry would not say. The first is that his appropriation is ten thousand dollars and that his clinic has been cut down to a mere skeleton. I do not see how in the world they handled over five hundred children last year. That is a tremendous task. With his equipment, how they do that is hard to understand, but I know they have done it and done it well. This mental-hygiene bureau in Richmond should be supported by this Society, and we should demand, I think, from the next Legislature, that they be more adequately supported. I need a half hour's time, at least, right there, because that is something that we should be on fire about; we should be indignant over it, I feel. But you know the reasons why, and there is no use to emphasize it.

Dr. Drewry emphasized again the juvenile court situation. These juvenile courts are doing big work; but there, again, we need some help for the juvenile court judges. A great many of them are men of really splendid understanding; but they certainly do need help, above everything else, in understanding the situations which are behind these cases. Mental hygiene goes into the home, above everything else, and when you do not know the home and do not know the domestic situation you can not judge fairly any kind of behavior problem.

The problem of the feeble-minded I know all of you are running into constantly. What are we going to do with the feeble-minded; where are we going to send them? This putting them into the industrial schools is defeating the idea of the industrial schools; they can not be what they were intended to be. The whole idea of the State is splendid, but putting the feeble-minded there breaks down the whole idea. In other words, the industrial school is not for feeble-minded people, and when we put feeble-minded children there we might almost as well stop the industrial school. It is not quite that bad, but it is bad. The problem of the feeble-minded is a tremendous one, and something more should be done about it and done right away.

There is another point I wish to emphasize that Dr. Drewry touched, and that is that there is no reason, it seems to me, why places like the University of Virginia hospital and other hospitals of that kind can not sterilize. I know there are a great many cases in which we could, with just a little legal machinery, do that and help out in this work, which is very necessary.

Dr. R. Finley Gayle, Richmond: It has been my privilege to be associated with Dr. Drewry in his work in Richmond since this program was begun, and he bas been greatly handicapped by lack of enthusiasm and interest and for other reasons. The main one, of course, is lack of funds. He, however, has done a remarkable amount of work in this short time.

There is only one point I want to discuss in this paper; one on which I think Dr. Drewry and I are somewhat in accord, and that is to sound a warning against wholesale sterilization. I think in the case of individuals who are insane, epileptic, or feebleminded, in whom there is unquestionably an hereditary factor, sterilization should be done. But there is a tendency among social workers and others to sterilize many in whom sterilization should not be undertaken.

Dr. James K. Hall, Richmond: I am interested, I think, only in what I do not know, and consequently that makes my interests very large. I was very much interested in the laughter that followed the announcement of the President that the psychiatrists would now be heard from. That sort of announcement almost always limbers up the situation somewhat. It is not infrequent, when I go to a medical meeting, that a doctor pats me on the back and says: "Well, Hall, how are the bugs now?" Once I said to a doctor that I see very few of the total number of them. Then he looked at me curiously.

The whole purpose, I think, of the mental-hygiene movement, or the hope of it, at least, is to bring the disorders of the mind (to make it somewhat more pragmatic, perhaps, I will say disorders of conduct), within the domain of legitimate medicine. Up almost to this time, I am afraid, mental disease has remained on the outside somewhere, just as an unbranded colt or cow on the Western plains remains outside the herd in ownership and is referred to as a maverick until it has been branded. Abnormal behavior has remained throughout the ages the medical maverick. Now, I believe that I know as little about dementia praecox as the surgeon knows essentially about cancer, and that Dr. Drewry knows as little about paranoia, perhaps, as the internist knows about the fundamentals of pernicious anemia; and that Dr. David C. Wilson, whom the President killed right in the middle of his enthusiasm, knows as little about epilepsy as the pharmacologist knows about the vitamins. But we are trying to enable ourselves and to encourage the members of our profession to think about mental diseases in terms of medicine. A doctor said to me a few years ago, at the conclusion of a paper I had read: "All you psychiatrists deal so much with words." "Well," I said, "I hope you do not feel as badly as I felt after you had dealt with me with cold steel." I am afraid we do; I am afraid all we medical men give more thought to our conception of things than we do to the real condition. But do you know that dementia praecox alone, in the State of Virginia, constitutes the largest single abnormal mental condition in the Commonwealth? Most of the patients that go to the hospital with dementia praecox remain there, and they probably constitute a fourth of the population in the State hospitals of Virginia, which is about ten thousand today.

Dr. Drewry (I never think of him in terms of years when I look at him, because I always think of him as one of the boys) has lived in a psychiatric atmosphere so long that he knows more about mental diseases than all the rest of us put together. He has formulated practically all the laws relating to mental sickness that have been put into effect in Virginia for the last twenty-five or more years. Now he is the head of this great bureau of the Department of Public Welfare of the State, through which he is lending himself, through the doctors of the State, to all the people in the State. I hope we shall give him all the encouragement that we can and all the material backing that he needs.

Dr. F. D. Wilson, Norfolk: I hesitate to get on my feet and say anything about this matter, but it is very close to my heart. Dealing entirely with children, and having a large number of children with behavior problems and an increasingly large group of mental defectives, I am wondering what we are going to do about it. It is not a problem for the general practitioner; he does not know how to handle it; but Dr. Drewry does know how to handle it. It seems to me the key to the situation is to give Dr. Drewry all the encouragement and help possible.

I am not prepared to say how far sterilization will meet the need, but it would help. We do need a much larger appropriation than we are getting. The tragically small appropriation we are getting now is a disgrace to the State of Virginia. It seems to me that it is up to this Society to get behind it and see that an adequate appropriation will be made. It can be done; if the Legislators are shown the need they will do much more than they have done in the past. I believe it is up to this body to get after the Legislature about it and have the appropriation made. It *can* be done and *should* be done.

Dr. J. S. DeJarnette, Staunton: I was unfortunate this morning in not getting here in time to hear all of Dr. Drewry's paper. What I want to impress upon you gentlemen is this, that the question of handling the unfit population of the State of Virginia is one of tremendous importance. Prevention should be our goal. I have been in the business for forty-three years, in connection with the Western State Hospital, where I have received seventeen thousand men and women who have been committed to that institution, and I have examined practically all of them myself. I see the needs of the situation, which I propose to represent to you.

We have spent thousands of dollars—as much as we could afford—for caring for the insane and the defectives. Our money should be spent in prevention; and I believe we stand a much better chance to get eagles by putting eagle eggs under hens than by putting hen eggs under eagles. I believe the environment, as well as heredity, is a tremendous force. Of course, I know Napoleon had epilepsy, and Saint Paul had epilepsy, and Julius Caesar had epilepsy, and Darwin himself was a manic depressive. I believe if we use the power we have to sterilize the unfit, we shall not go far wrong. Virginia has already sterilized fifteen hundred people. She is next to California, which has sterilized over eight thousand people.

You have all heard of the Kallikak family. In five generations of that family there were 480 defectives that cost the State of New Jersey two million dollars.

I just want to impress upon you the importance of backing up this sterilization law. Sterilization in Virginia is progressing rapidly. The people are backing it up. I do not think the doctors understand how quickly it can be done. We have the only law that has withstood the test in the Supreme Court of the United States. Justice Holmes says that three generations of defectives are enough. In sterilizing these people we have had only one death among fifteen hundred people. That death followed the operation, but I understand the doctor said it was not caused by the operation; it was not a surgical death. I reckon Dr. Horsley knows what a surgical death is. This was not a surgical death.

## THE RELATION OF IODINE, WITH SPECIAL REFERENCE TO IODIZED SALT, TO THE INCIDENCE OF SIMPLE AND ADENOMATOUS GOITRE.*

WM. H. HIGGINS, M. D., Richmond, Va.

Two years ago the House of Delegates appointed a Committee† to make a study regarding the effect of the general use of iodized salt on the incidence of simple goitre. Although an official report was made at the following meeting it was deemed advisable to present our findings to you for your consideration.

In order to obtain the various points of view of clinicians in the widely scattered sections of the country, the Committee selected a list of at least seventy-five (75) representative physicians in the goitrous as well as the non-goitrous areas to whom a brief questionnaire was sent. This group included well-known medical men in the United States and Canada who by their contributions have shown themselves particularly interested in the study of goitre.

The object of this questionnaire was to determine the effect of iodized salt on the incidence of simple goitre and also its effect, if any, on the frequency of toxic goitre. A questionnaire was therefore formulated covering these points, as follows:

1. In your experience, do you feel that there has been a substantial decrease in the number of cases of simple goitre following the widespread use of iodized salt?

2. Do you believe that there has been a relative increase in the number of cases of toxic goitre since the introduction of iodized salt?

3. Is iodized salt in general use in your community?

This letter was mailed to the seventy-five (75) physicians with a self-addressed stamped envelope enclosed. Replies were received from forty-three (43).

In answer to Question 1—with reference to a decrease in the number of cases of simple goitre since the introduction of iodized salt,—thirteen (13) replied in the affirmative, thirteen (13) in the negative, and seventeen (17) were non-committal.

In answer to Question 2 concerning a relative increase in the number of cases of toxic goitre following the use of iodized salt, fourteen (14) replied in the affirmative, nineteen (19) in the negative, and eleven (11) were non-committal.

In answer to Question 3 relating to the general use of iodized salt in their respective localities, nineteen (19) replied in the affirmative, seventeen (17) in the negative, and seven (7) were non-committal. No less illuminating were the additional remarks which were included with many of their replies. Iodized salt was the method of choice in every community where a universal administration of iodine was attempted with the exception of Rochester, N. Y. In this city iodine was placed in the water supply which—according to McCann—was an effective method. A number objected to any wholesale type of medication, but advocated minute doses of the drug in tablet form only for children and pregnant women. Others were convinced that iodized salt had no effect on prevention of simple goitre and did not cause any notable increase in toxic goitres.

It was difficult from the assembled data to obtain any accurate estimate as to the amount of iodized salt which is consumed in the different localties. Reports varied widely in the several states. In a personal communication from the Morton Salt Company, the committee was informed that two-thirds (2/3) of the table salt supplied by them to Virginia was iodized. Out of justice to the salt industry, it should be stated that no extra charge is made to the consumer for the iodized salt, although there is an added expense to the manufacturer.

Iodized salt was first introduced by Marine and Kimball in 1924 in Michigan. At that time a survey of the Detroit schools showed that 36 per cent of all children had endemic goitre. In each succeeding year there was a definite drop until in 1931 it reached a minimum of 2.1 per cent. Reports from Grand Rapids, Akron, Ohio, and other cities, are equally convincing as to the effect of this therapeutic measure in the prevention and apparent relief of simple goitre in school children. On the other hand, an equal number replied in the negative, although they offered no statistics to support their conclusions.

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

†The Committee on the Study of Goitre is composed of N. G. Wilson, M. D., Norfolk, Va.; H. B. Mulholland, M. D., University, Va., and Wm. H. Higgins, M. D., Richmond, Va.

To what extent iodized salt can and does inactivate benign adenomas has never been definitely established. Crile believes that a number of such cases have passed through his clinic. Hartsook, his associate, advanced the belief that a certain number of people who have been more or less iodine starved are more sensitive to the drug than the normal individual. Boothby, of the Mayo Clinic, states that "there has always been good evidence available that large doses of iodine given to patients who have adenomatous goitre will render some of them hyper-thyroid." He feels it is improbable that small quantities of iodine used in table salt will materially increase the incidence of hyper-thyroidism. McClure supports this contention by supplying figures from the Detroit hospitals which tend to show that toxic goitre operations have materially decreased since the introduction of iodized salt in Michigan. Lahey, of Boston, and Jackson, of Wisconsin, state that they have never been convinced that toxic goitres are increased by iodine. However, Tinker, of Ithaca, N. Y., has seen a definite increase in toxic adenomas since iodized salt was introduced, and believes there is a definite relation of cause and effect.

In view of the fact that several physicians in the Tidewater section of Virginia have noted an apparent increase in the number of toxic goitres since the introduction of iodized salt, an analysis of the operative statistics from the two largest Norfolk hospitals was made. In the Protestant Hospital, the records indicate that in 1925—when iodized salt was introduced—one (1) in three hundred and seventy (370) major operations was for a thyroidectomy. The ratio rose to one (1) in one hundred and two (102) in 1927, and in 1931 was one (1) in one hundred and seventy-two (172). Unfortunately, the type of goitre was not listed.

In St. Vincent's Hospital, during the year of 1924, there was one thyroidectomy in every one hundred and twenty-eight (128) operations. In 1927 the ratio was one (1) in eighty-six (86), and, in 1931, it was one (1) in one hundred and thirty-five (135). Martin, of Norfolk, states that in his opinion there has been a decided increase in toxic goitres during this period, and his belief is shared by others in that vicinity.

With such divergent views held by equally competent men throughout the country, it is reasonable to assume that certain variables may be present in one locality which may not exist in another section. Marine admits that, while lack of iodine is apparently the chief cause of simple goitre, other factors—such as diet, poverty, water, and damp sunless habitations—enter largely into the picture in many communities. McCarrison has shown that rats which were kept in so-called dirty cages developed goitre under conditions otherwise similar to a control group. In an exhaustive study of the relation of solar rays to endemic goitre, Smith has tabulated data which points to a definite influence of ultra-violet rays on iodine metabolism. His collected evidence suggests that solar radiation is in inverse proportion to the incidence of goitre in a definite locality or at a definite season. This lack of solar radiation may result in a deficiency of the iodine content of the thyroid gland through deficient irradiation of air, soil, food, drinking water or skin of the organism, and its mechanism may be a lack of diffusible iodine, an increase in a goitro-genic factor of certain vegetables or a disturbed calcium metabolism. Marine has proven that rabbits will develop goitre when fed on winter cabbage, but will remain healthy when summer cabbage is supplied. McCarrison found that when pigeons were fed an excessive amount of lime there was a definite increase in the size of the thyroid gland, due to an accumulation of colloid material. He concluded that a balanced adjustment of calcium and iodine in the diet is necessary for normal storage of colloid, and it was his impression that a lack of this chemical balance had a distinct bearing on the pathogenesis of colloid goitre in man. Sturges, of Ann Arbor, has found that Lugol's solution is less effective on patients suffering from Grave's disease in Michigan than in Boston. He believes this difference may be due to the fact that those who have been receiving minimum doses of iodine for some time have become refractory to the drug and are less responsive to its effect.

These observations are emphasized to show that the control of goitre cannot be measured in milligrams of iodine nor can it conform to a standard which would be applicable to all localities. An analysis of the questionnaire indicates that there is a wide difference of opinion as to the effect of iodized salt not only on the prevention of endemic goitre but also on its possible harmful effects on adenomatous

goitre. Much of this confusion may be due to these variable factors which have not been properly evaluated in the general plan of goitre control.

In conclusion, it may be stated with positive assurance that iodine is still the major factor in the prevention of simple goitre. Although the amount of iodine is minute (?), there is sufficient clinical evidence for believing that in the goitrous districts it has been efficacious in reducing the incidence of simple goitre. We must recognize the fact, however, that its effect varies in different localities, at different seasons of the year, and is intimately linked with calcium metabolism. It is entirely possible that these extraneous factors may influence to a large extent the end results of this preventive measure.

In the light of our present knowledge there is no contraindication to the use of iodized salt in the so-called goitre belts. The overwhelming evidence of goitre control by iodized salt is convincing even though the results may be obtained at a cost of an increased incidence of toxic cases. We do feel, however, that in the non-goitrous sections, the widespread use of iodine in any form is not justifiable and may prove to be distinctly detrimental.

To what extent benign adenomas of the thyroid gland have become inactivated by the persistent use of iodine has never been definitely established. In our questionnaire fourteen (14) replied in the affirmative, nineteen (19) in the negative, and eleven (11) were non-committal.

Your Committee on the Study of Goitre in Virginia during the past year has been collecting data from a selected list of twenty-eight (28) hospitals in the state, from which it is hoped that reliable statistics can be obtained. In this study, an effort is being made to ascertain the degree of exposure to iodine of all cases of toxic adenoma admitted to these institutions.

It is our belief that with the full cooperation of these hospital staffs sufficient evidence can be secured upon which a fairly accurate conclusion may be based.

*Medical Arts Building.*

### Discussion

Dr. N. G. Wilson, Norfolk: Dr. Higgins, I think, has given you a very clear outline of the salient points in connection with the investigation that was started several years ago at the instigation of the House of Delegates of our State Society.

In this discussion, it may be conceded that in the goitre areas, iodine in some form should be given children and pregnant women. Likewise, I think it is fairly well established that in by far the majority of instances, the adenomatous or, as it is more conservatively called, the nodular goitre has its inception before the age of twenty-one. However, there may be quite a proportion of them that are not manifest until after this period though we have no means of determining that they had not already begun during adolescence. If these statements are in the main true, it is difficult to see the rationale of any method of wholesale iodinization of the population, especially when there is a question among many prominent clinicians as to the effect of even minute doses of iodine on nodular goitres. Many of these clinicians believe that a thyroid gland that has passed through one or more cycles of mild hyperactivity, followed by recession and the deposit of a small amount of colloid, even though it may not be demonstrably enlarged, is a potential nodular goitre. They are *not* normal glands and are often hypersensitive to iodine.

Now, if there is enough iodine in iodized salt to prevent endemic goitre, it would appear rational to believe that this amount of iodine may be sufficient to excite hyperactivity in a nodular goitre.

In Norfolk and vicinity, as in other widely separated sections of the United States, during the period between 1923 and 1929, a large increase in hyperthyroid states was noted. This is seen in Dr. Higgins' reports from our local hospitals. After reaching a peak in 1929, the number of cases receded though not to a level of the period prior to 1923. Whether or not iodized salt had anything to do with this wave, I do not know. But, I do know this: when we first began seeing patients with nodular goitre, who for years had given no evidence of hyperthyroidism, but who through reading advertisements, or on unwise advice had begun using iodized salt, often in undue amounts, and they developed hyperthyroidism, we looked upon it as pure coincidence. But as the coincidence became so frequent and the histories so similar as to be almost identical, we were forced to the conclusion that sequence was one of cause and effect. As Dr. Higgins has pointed out, there is good evidence that the thyroid reaction to iodine varies in different localities. In quite a number of instances, patients with nodular goitres have removed from the Tidewater section to the interior of the State and have developed hyperthyroidism after using iodized salt, on the advice of physicians who assure me they have not had such an experience with their local patients.

One instance is recalled of a beautiful woman, forty-five years of age, with a typical Mona Lisa thyroid enlargement and a mild degree of hypertension, whom I had observed over a period of years and who had been advised to disregard the goitre. When she left Norfolk to make her home in an interior city, she was advised to consult a physician periodically regarding the hypertension. About eighteen months later she returned to Norfolk, presenting a typical picture of advanced hyperthyroidism. Having seen so many similar cases, I ventured to ask, "Who told you to eat iodized salt?" She was greatly surprised when told that it might be very harmful and said that the physician whom she consulted about one year previously told her her cardiovascular condition was good but that she should eat large amounts of iodized salt.

This is a typical history of a large proportion of nodular goitres with hyperthyroidism seen by us; that is, a slightly or moderately enlarged goitre ap-

parently activated by the bombardment of the system by the continuous use of minute amounts of iodine over a period of months.

Your committee, of which Dr. Higgins is chairman, is endeavoring to obtain data, though representative hospitals throughout the State, and it will greatly facilitate our work if these hospitals will cooperate with us in an effort to determine whether or not iodized salt may induce hyperthyroidism in the presence of nodular goitre.

Dr. H. B. Mulholland, University: Dr. Higgins and Dr. Wilson have so thoroughly covered this subject that there is very little left to say. I think, however, all surgeons will agree that the widespread and prolonged use of iodine has done a great deal of harm in hyperthyroidism. At the present time we have a patient in the University Hospital who was given iodides for some condition other than goitre. He entered the hospital with a full-blown hyperthyroidism and a basal metabolism of about plus 65. So far as we could tell from his history, the hyperthyroidism was initiated after the iodine was begun.

Since I became interested in this subject, with Dr. Higgins and Dr. Wilson, I have tried to search the literature and cannot find where any systematic investigation of the use of iodine and iodized salt in communities has been made. I think this is an important problem for the Society, and it is an investigation that can be made in Virginia, and I know of no other investigation, as I say, that has been carried out in this country. I found several papers in the German literature which reported on this particular subject, the use of iodides and the use of iodized salt in initiating hyperthyroidism. In these two or three papers that I read the impression was quite conclusive that the use of iodides for various conditions and the use of iodized salt had initiated hyperthyroidism in both the nodular and exophthalmic types of gland. It is our hope to get this information from the members of the Society. It cannot be gotten from the patient's history but must be obtained at the bedside. We hope to have your cooperation in continuing this investigation.

Dr. Higgins, closing the discussion: I am sure that all of us detest a questionnaire. If we have received anything to be filled out, it is usually consigned to the wastebasket. Your Committee on the Study of Goitre, however, has found it necessary to secure certain data and we have selected a group of twenty-eight standardized hospitals in the State from which we hope to obtain information with reference to the incidence of iodine therapy in cases of toxic goitre. Up to the present time, the response has not been as encouraging as we had hoped but with your cooperation we feel that we can have sufficient material from which a reasonable conclusion may be obtained.

The object of the questionnaire is simply to find out what percentage of patients with toxic goitre have been using iodized salt or other form of iodine prior to the onset of their symptoms. Your cooperation will be very much appreciated.

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## GROWING OLD IN MEDICINE.

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In reading the various medical journals as printed today, one is struck with the impression that the only thoughts entering into the medical mind are scientific, but in the more serious moments of one's life our minds wander back over the past with its fond memories; takes an inventory of the present and prophesies as to the future. The subject as presented in this discussion is one that undoubtedly enters into the thoughts of every medical man, and it has been foremost in my mind for several years.—a subject that has of its own accord attracted the attention of philosophers through the ages, a subject that becomes an ever-important one to all of us after the passage of the middle milepost in one's span of years.

To some this might not, perhaps, be a very pleasant subject to dwell upon. This depends, however, upon our attitude. Suppose we agree with Mr. VanAmburgh, who says "Age is more a mental condition and not so much a date on the calendar. There are some men at thirty with thirty winters in their hearts, and some men at sixty with sixty summers in their souls. Mere age is not the test of a man: *Loyalty is.*" Or perhaps we could look upon the subject as Will Rogers does. He was in Arizona the other day and he wrote from there saying, "Arizona has a fine old character for a new governor. He is a country doctor: he brought 10,000 babies into the world, and when they got to voting age, he ran for office!" Well, we can't all be *Governors* when we give up medicine—there wouldn't be enough states to go around—but maybe we can all be cowboys! If you please.

Getting back to a more serious vein, my subject might have read "*Growing Old Gracefully in Medicine*," for it is to that phase of the subject I wish to direct my remarks. I say it is a subject that attracts one's attention after the passage of the middle milepost in one's career, because it is only after one feels the stress and strain of a decade or two that one really begins to appreciate the philosophy of the old Roman proverb:

Old when young
Is old for long.

On the preparation of the discussion of any subject that pertains to old age, one would naturally read again that master essay, "De Senactute," by Cicero, the great Roman orator. For it is in that classic, written before the Star of Bethlehem appeared in the East, that this great scholar addressed his remarks concerning Old Age to his friend Atticus. It is from that great masterpiece that old age has found a companion and consolation through the centuries. Allow me to say that one will not find

old age burdensome if one will absorb the philosophy contained in that great work.

Not very long ago, Mr. Chauncey Depew, that great American, the head of our greatest railway sytem, a man who had claimed as his personal friends the crowned heads of the great nations of Europe since the closing days of our Civil War, a man who was still active in spite of his more than ninety years, upon sending his resignation to the board of directors, said: "I find that I must bow to the inevitable." So, gentlemen, we, too, sooner or later, must bow to the inevitable!

It is, therefore, my friends, a realization of this inevitable that I wish to bring to you. May we find a way in which to accept it gracefully. When it comes to me I hope to be able to say, with the philosopher of old, "I have no fault to find with Old Age." Physicians, as well as all other men, who have no resources in themselves for securing a good and happy life, find *every* age a burden.

As a nation prepares arms for peace and security, for prosperity and happiness, an individual, likewise, must prepare his arms for happiness, prosperity and security in old age. The arms that will best prepare us to grow old gracefully in medicine are—culture, thrift, dignity, mental alertness and exercise of the virtues. For if those virtues have been maintained through life, then one has lived *much* as well as *long*. The consciousness of a well-spent life, the recollection of noble deeds are the greatest reward that life can offer us.

Memory dwindles, if it is not kept in practice. Therefore, let us learn something daily. Let your pursuit of study end only with life. Cato began the study of many foreign languages at the age of eighty-three. Edison accomplished his greatest work after having passed the time allotted to man. "Old age is respectable as long as it asserts itself, maintains its proper rights and is not enslaved to anyone." The most beautiful thing in life is an old person who has spent a life of culture and refinement, and who has maintained the virtues throughout. What is it that can bring the feeling of satisfaction and sincere joy in old age? Can it come through poverty? Does it come through great riches? No, it comes only through the realization of duty well performed. The test of a well-spent life is this: "Is the world a better place for my having passed this way?" The foundation for that deep satisfaction is laid in the planting of the trees that others may have the shade,—in the building of bridges that others may cross the stream more easily. It is the planting of the seed that brings forth the harvest. In other words, it is the fulfillment of the Law of the harvest, "to reap more than we sow." "Sow an act and you reap a habit; sow a habit and you reap a character; sow a character and you reap a destiny." In the words of Baily, "We live in deeds, not years; in thoughts, not breaths; in feelings, not in figures on a dial." We should count time by heart throbs. "He most lives who thinks most, feels the noblest, acts the best."

### Growing Old Gracefully in Medicine

There is no act in life that is a graceful act if it is in violation of the laws of God or man. Therefore, gentlemen, I say to you that if you wish to come to the end of old age gracefully, you must strictly adhere to the elements of a well-spent life. Academic preparation for one's career, proper home environment as a child, a determined and well meant ambition, advice conscientiously sought after and effectively applied are the foundation stones for a successful career as a physician. But the first requirement for the physician's happiness and for his guarantee of a joyous old age is the feeling that he had rather be a doctor than anything else in the world. The practice of medicine to him should be the most sacred and most needed work that he can perform. He should see the need of his skill. He should apply his skill as if it were a God-given talent to be used in the relief of human suffering. Where there is human pain, he should be happy to go.

In this highly specialized field of medicine today, our colleges are turning out doctors in great armies. Certainly a good per cent of the graduates are not by nature, ambition or training properly fitted for the great work that lies ahead of them. A goodly number would have made better mechanics, better clerks or better engineers. But they are in the medical field. It is the age of the specialist. Many leave college without any special training in the various departments of medicine, hoping later on, perhaps, to take up a specialty. Here is the field for the established physician's greatest work—that of directing the young graduate; inspiring him for greater things; helping him financially by advancing money for a special course if need be; aiding him in the selection

of a location; giving him his first practice; watching him grow in medicine, and realizing he is grateful for your aid and sympathy; being a helpful companion to him as older physicians were to you when you began active practice. From the sowing of these seeds of helpfulness and encouragement, you yourself will reap a harvest of happiness in later years.

The physician to grow old gracefully should "live in the house by the side of the road and be a friend to man." I think we will all agree that the ideal of medicine is *unselfish service;* let us not fall short of that ideal. The doctor's opportunity for good in the community in which he lives is greater than that of any other man. The very nature of his work gets very close to the hearts of his neighbors and friends—therefore, his greater opportunity. In all phases of community work, whether in a small village, in the open countryside, or in the metropolitan city, he is a leader. Much is expected of him. His reward is not always financial; the restoration of sick to health, and the inner satisfaction of knowing that his skill has performed the miracle of healing in the relief of suffering and distress, is greater compensation than a swollen bank account.

However, let me say to you that every physician should exercise enough wisdom and foresight to protect himself and his family against the hazard of dependence in Old Age. "Entirely too many doctors, who have been in the habit of living on their daily incomes, reach old age only to realize that they have left no margin of savings to safeguard their future." In fact, so much of his life has been taken up looking out for others that he often fails to realize that disaster may come to himself and his family. The man that spends all that he receives during his income-earning years must inevitably become dependent upon others in his old age. Can you imagine a sadder picture? Under such conditions, no man can be happy—especially the doctor, who, as a rule, is an independent, self-reliant sort of person. With this feeling of economic independence, even with old age upon us, life will be sweet and well worth while.

As the years pass over our heads, let us not feel that life is useless. As we ripen with the experience of years of unselfish service to humanity, let us continue to "carry on,"—realizing that "mere age is not the test of a man; *loyalty is.*" So, as we "move gently down the stream of life," may we observe the Golden Rule of our profession in such a manner that we shall come at last to "sleep with our fathers." And when that day comes that we shall feel we can no longer practice our profession with skill, may we be able to say, with the philosopher of old: "We have no fault to find with old age."

*Medical Arts Building.*

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## CYCLIC VOMITING AND MIGRAINE IN CHILDREN.*

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The title of this paper deals with two fairly common disorders one of which, cyclic vomiting, is limited to the earlier years of childhood; while migraine frequently begins in the first decade of life and may continue, unless controlled well into middle age or longer.

It will be my purpose to indicate the common heritage of the two diseases, the striking similarity of the apparent causative factors and symptomatology, and, finally, possibilities of treatment, that constitute, I believe, a distinct advance over those heretofore advocated.

### Cyclic Vomiting

This disease, as stated, is recognized as such only in childhood, and is characterized by vomiting as the outstanding expression of the malady. Synonyms employed, suggesting the cyclic nature of the vomiting, are "periodic" and "recurrent," all of which indicate the frequent and regular emetic explosions without apparent cause.

The disease is rarely seen before the third and after the twelfth year of life, though it is believed that it may assume other forms in later years. Its incidence is much greater in children of the middle and higher economic and intellectual groups than in the very poor and ignorant. Girls are said to be victims more frequently than boys.

The symptomatology is probably familiar to all of you whose professional experience embraces disorders of children. The family physician encounters more patients with cyclic vomiting than the hospital doctor. For purposes of clarifying certain tentative ideas regarding the etiology and treatment of the disease, it is thought necessary to review briefly

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the clinical picture presented by the average patient.

The onset of the vomiting oftentimes is sudden and without warning. In many instances, however, the child indicates prodromal symptoms which, from the mother's previous experience with the patient, may be sufficient to prepare her for the impending transient state of biochemical "anarchy." For a day or two before the attack the patient may become peevish, listless, or manifest other changes in disposition and temperament. Loss of appetite, a slight fever, and the appearance of dark circles about the eyes may complete the list of danger signals. The daily stool may be missed or occasionally a slight diarrhoea is present. At this stage a dose of castor oil, followed by the administration of soda bicarbonate and strict limitation of the diet, may abort the attack. Otherwise, the child, either with or without preceding abdominal pain, begins to vomit. The emesis shortly becomes so frequent that neither food nor water can be retained. At times bile is vomited with the stomach contents. Pierson reports a case in which the child vomited fifty-two times in thirty-seven hours.

The natural consequences of such an ordeal, if continued, can be readily predicted. The little victim's tongue is coated, canker sores may appear in the mouth, the eyes are sunken in their orbits, the face alternately pale and flushed, the abdomen retracted, the bowels costive, the skin dry and warm from dehydration and fever; the pulse quickens, and eventually the patient becomes utterly prostrated. The mental processes usually are affected, and stupor or even coma may supervene. Naturally, the urine is scanty and highly colored. The acetone and diacetic acid tests are strongly positive. The state of acidosis is also reflected in the sweetish odor of the patient's breath and the sighing type of exaggerated respiration. The child begs for water when aroused only to vomit it as soon as swallowed.

The acute illness usually lasts from two to three days, and, unless the vomiting is prolonged, recovery may be expected rapidly. Fortunately, fatalities rarely occur.

It is interesting to speculate regarding the possibility of a shift in these patients from a state of marked acidosis to one of mild alkalosis initiating the sudden or gradual cessation of vomiting and recovery. Recent investigations supporting this theory indicate that the continued loss of hydrochloric acid from the stomach with prolonged vomiting may result in an increase of the normal alkali reserve of the blood plasma.

The mother of the patient, on account of anxiety and loss of sleep, presents a pathetic figure as the curtain drops on the trying drama. The attending physician is subjected to the embarrassment of his conscious futility in answering the parent's question as to what measures may be taken to prevent the next recurrence.

The diagnosis is fairly easy if there be a history of preceding attacks with uncomplicated recovery. If it is an initial one for the patient, the physician finds his mind rapidly suggesting a number of disorders or diseases as an explanation of the grave symptoms. The vomiting may be confused with "acute indigestion," meningitis, poisoning, acute nephritis, appendicitis, and intestinal obstruction. A period of observation with careful physical examinations and the indicated laboratory investigations usually will make possible a differential diagnosis.

In this brief review of the subject I am more concerned with the etiology and treatment than with its other phases.

I found much interest in referring to a number of textbooks on pediatrics covering a period of approximately twenty-five years. The authors will be recognized as outstanding authorities in the field of children's diseases. My interest centered largely in their widely divergent views regarding the cause of cyclic vomiting. As to the existence of both predisposing and exciting factors, most of them are agreed. I shall quote as briefly as possible:

Kerley states that children with cyclic vomiting often show various nervous phenomena, such as habit spasm, chorea, recurrent spasmodic croup and bronchitis. He emphasizes habitual constipation, systemic infections, while fright, fatigue and unusual excitement he regards as "merely the spark that ignites the powder."

Fischer takes issue with those who think that the attacks are not dependent upon primary gastric disorders, stating that in every case seen by him "some dietetic error or acute intoxication" had invariably occurred as an exciting factor.

Carr reports that a "gouty, rheumatic or neurotic family history" is found in most of

these patients. After refuting the theory of a uric acid diathesis and organic disease of the gastro-intestinal tract, he mentions its similarity to *migraine*. Because of the presence of acetone and diacetic acid in the urine, he agrees with others in thinking that the primary cause may be an acidosis. He further visualized the disordered internal metabolism as similar to that occurring in diabetes.

It should be stated that the acidosis theory has had many adherents, though most of them have since recognized the probability that the acidosis is the effect rather than the cause of the recurrent symptoms.

Holt stresses the higher incidence in delicate and nervous children raised under the most favorable environments. The child's antecedents, he thought, were frequently neurotic or gouty. Most of his cases had been fed excessive amounts of carbohydrates, especially oatmeal and potatoes. As exciting causes, he mentions fatigue, excitement, such as a circus, railroad journey, or party.

Still discusses the subject under the heading of "So-called Bilious Attacks." Children of nervous temperament, he agrees, are most susceptible. He also is impressed with the similarity of the prodromal symptoms to those of *migraine*. Auto-intoxication, acidosis, dyspepsia and constipation are considered by him as exciting factors. He is enthusiastic regarding the value of soda bicarbonate both prophylactically and therapeutically.

Other authors might be quoted, if necessary, to show a fairly general agreement on certain predisposing factors, especially the nervous family background and the temperamental child, and yet exhibit an unusual conflict of views regarding the direct or exciting cause.

## Migraine

Until recently migraine in children apparently has not been generally recognized. Of the authors quoted, only two discuss it in their textbooks, and one of these devotes only ten lines to the subject.

Fischer believed that migraine was an affection of neurotic, over-worked school children who were sufferers from dyspeptic attacks.

It is significant that Holt, who does not discuss migraine, states that cyclic vomiting has "many points of resemblance to migraine in adults." He also quotes Rachford's report of four children in whom cyclic vomiting attacks were replaced in later life by migraine. This observation is valuable as additional evidence accumulates to indicate the probable relationship of the two diseases and that they may be inter-changeable in the same patient.

Still includes migraine also under the subject of "So-called Bilious Attacks." He states that headache is to be expected in children with cyclic vomiting, but the headache in migraine is a more integral part of the disorder. He thought migraine was infrequent in children but was more typical between the ages of five and twelve. He found difficulty in differentiating at times cyclic vomiting and migraine, there being fever, vomiting and headache in both conditions. In fact, he thought that they may be "very closely akin."

The allergic or sensitization basis of hay-fever, certain forms of bronchial asthma, urticaria, eczema, angio-neurotic edema, mucous colitis, and occasionally epilepsy, has been recognized for a number of years. A distinct advance in therapy has resulted from a more scientific approach to these diseases, though it must be admitted that many patients in each group fail to show positive skin tests to the causative food or other protein substance, or else do not improve under specific treatment with the apparent offending protein.

During the past few years, as the result of investigations made by Vaughan, Rowe, Balyeat, Rinkel and others, migraine has also been definitely included among the recognized groups of diseases resulting oftentimes from hypersentitiveness to certain substances capable of causing allergy. The work of these investigators at first was limited to the study of migraine in adults. Many cases are reported who have been treated medically, subjected to ocular refractions, nasal operations, appendectomies and cholecystectomies, without relief of the recurring attacks of headache and vomiting, and who were subsequently either entirely cured or greatly benefited by excluding the offending article of food from their diets.

Balyeat and Rinkel estimate that approximately 7 per cent of all people in the United States have been victims of migraine. In a series of 202 cases they report relief or cure in from 40 per cent to 80 per cent of these patients. A family history of allergic diseases was obtained in 82 per cent of their cases. Eighty-one per cent suffered from other allergic diseases. Only two (1 per cent) of their patients whose symptoms began before ten

years of age suffered from migraine alone. The remainder had other recognizable allergic states.

Reporting their studies in March, 1931, before the American College of Physicians in a paper entitled "Studies in Allergic Migraine," the authors state that their investigations justify the following conclusions:

1. Migraine appears to be common in childhood, since nearly one-third of all cases studied developed symptoms during the first decade.

2. Like asthma, symptoms of migraine in children may vary greatly from those of the adult. Gastric symptoms are usually marked.

3. Migraine is inter-changeable with other allergic syndromes (hay fever, bronchial asthma, etc.).

The same authors in November, 1931, in a discussion of "Allergic Migraine in Children," estimate that approximately 2 per cent of all children manifest symptoms of migraine at some time during the first decade. Their figures, if correct, would indicate that one million children in the United States are, or have been, victims of the disease. A number of their little migrainous patients under five years of age consulted them, not because of headache primarily, but for relief of other allergic diseases. They emphasize the striking hereditary factor in these children, stating that they "had not studied a patient with migraine under ten years of age who did not have a definite family history of allergy." The mother more often than the father seemed to be responsible for transmitting the disease. As with cyclic vomiting, the majority of the patients were girls. They have prepared diagrams showing that migraine and asthma are interchangeable. Regarding cyclic vomiting and migraine I find this statement: "The chain of symptoms described by various authors as being associated with cyclic vomiting is not typical of that found in the adult who suffers with migraine. However, it simulates closely that seen in children with migraine. In dealing with the chain of symptoms spoken of as cyclic vomiting, a diagnosis of migraine must be given consideration."

One cannot fail to be impressed with the similarity of symptoms of these two disorders of childhood. In migraine, as with cyclic vomiting, usually there are prodromal disturbances consisting of languor, irritability, disturbance of appetite, and abdominal discomfort. A night of restless sleep is followed the next day by fever, vomiting, coated tongue, and at times abdominal pain. The headache is not as severe ordinarily as in adults and frequently is not unilateral (hemi-cranial). A history of previous attacks and a definite family history of allergic diseases will aid materially in recognizing migraine in children.

*Treatment* of children suffering with cyclic vomiting and migraine must be considered from the standpoint of (1) predisposing factors, (2) the care of the patient during an attack, and (3) the prevention of recurrences.

1. It is generally recognized that these children are usually tense, nervous individuals. Most of them are ambitious, industrious and intellectually advanced in their school duties. An emotional disturbance, fright, unusual fatigue, excitement, constipation, indiscretion in diet, or other break in their smooth daily routine may herald an approaching storm. They should be guarded by every protective influence from such contributing factors as are conducive to a recurrence of their illness.

2. During the attack the physician has no specific treatment. His therapy must be symptomatic. The outstanding indications are to overcome the dehydration and acidosis if vomiting is persistent. Water containing glucose and soda bicarbonate should be introduced by bowel if fluids, fruit juices and alkalies are not retained orally. Occasionally glucose or salt solution must be administered intravenously, and in very young children physiologic saline solution intra-peritoneally. The attack may at times be aborted if treated during an early stage.

3. The prevention of recurrent attacks is the chief responsibility of the physician and constitutes the most interesting phase of the problem. The foregoing data bearing on the hereditary influences, the age incidence, the type of individual affected, and the symptoms which the two diseases have in common, appear to warrant the assumption that cyclic vomiting and migraine, in most instances, have a common direct or exciting cause, namely, a food allergy or idiosyncrasy quite identical with the sensitization encountered in other well-known allergic diseases. As with hayfever, asthma, etc., so with cyclic vomiting and migraine, valuable information regarding the patient's particular reaction to one or more proteins may be determined in a certain percentage of cases by resorting to skin tests. In

contrast to other allergic diseases which may result from contact or inhalation of pollens, dust, animal epidermal products, as well as food, the two diseases under consideration need be investigated from the dietary standpoint only.

In migraine Vaughan, Rowe, Balyeat and Rinkel have shown that while many foods or combinations of food may produce the symptoms, certain ones are more often responsible for the attacks. The following are mentioned in the order of their importance:—(1) milk, (2) wheat, (3) eggs, (4) nuts, (5) beans, and (6) fish.

The "elimination diet" plan provides a practical and convenient method of determining the specific sensitiveness of children to foods. In many instances even with negative skin tests the causative food can be found. If the mother is observant she may have learned previously of a direct association between certain articles of food in the child's diet and the recurrent illness. Such a clue should be given a trial by the total elimination of the suspected food from the patient's diet. In the case of wheat, milk and eggs, it is necessary not only to prohibit their use as such, but also in combinations with other foods.

Without a known clue the more common articles of food mentioned may be excluded one after another until the offending one can be demonstrated. If the attacks recur at frequent intervals it is practicable to limit the diet to one solely of milk for a time; if there are no recurrences, the diet should then be built up by adding one article at a time until an attack indicates the specific food.

Since most of these children have at one time or another more than one manifestation of their allery, the cause of their associated asthma, hay fever, urticaria, eczema, etc., should be investigated whenever possible with the aid of skin tests.

Not infrequently after a period of freedom from attacks of vomiting spells and headache following the withdrawal of the causative food, or foods, very small amounts of the specific food, gradually increased in amount, may be added to the patient's diet without ill effects. By some it is thought that such a plan may aid in overcoming the hypersensitiveness of the patient in much the same manner that vaccines may produce immunity to bacterial infection.

Fortunately, many allergic children, with passing years, even when the disease is not diagnosed and treated, appear to become gradually desensitized spontaneously with disappearance of their symptoms. In others the cyclic vomiting or migraine may later assume an entirely different type of allergy, e. g., hay fever, asthma, etc.

I should be guilty of a lack of candor if the impression were conveyed that all children with migraine and cyclic vomiting can be proven definitely allergic and amenable to successful treatment in the manner indicated. Doubtless, other exciting causes exist in a certain percentage of patients who must be treated according to the indications elicited by the several investigations.

In conclusion, I would say that I am disposed to accept tentatively the theory and practice outlined because it seems to me reasonable. This, I think, is the frame of mind that is a necessary precursor of extended clinical experience in any field of therapy. Up to the present time my experience with the method is by no means extensive. Two children, seen during the past few months since my interest in the subject has been aroused, have been reported as definitely improved, but they have not been observed sufficiently long to warrant worth-while conclusions. At any rate, I shall continue to approach children suffering from cyclic vomiting and migraine with far more optimism than formerly. Further developments and investigations may reveal that much unnecessary and futile medication, as well as useless operations, can be avoided in relieving these little patients. If so, many anxious and sorely tried mothers will "arise to call us blessed."

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## INFLUENZA—SOME OBSERVATIONS.*

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With rare exception, the remarks of the president are expected to be a long and wearisome discourse on abstract and rather impracticable subjects. My efforts will be to deviate from this course and present a few brief observations gleaned from a fairly comprehensive survey of the literature of a most practical and important subject.

There has been no little criticism of many essayists in seeming to exploit their own prowess and skill to their colleagues, as professional

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advertisement, instead of the dissemination of useful knowledge. Again, I hope to differ by refreshing your memory of influenza, which is an ever present problem, either *per se* or as its sequela, to both the internist and the specialist. You will find these remarks dealing with rather negative observations, and are presented with the hope that you may take home something of practical value to your practice.

The term influenza, or "flu," has become rather synonymous to the symptoms of absorption, due to upper respiratory infections. This tendency to magnify the importance of cases of simple rhinitis, pharyngitis, tracheitis, etc., has hindered the determination of true outbreaks of the disease. Again, there is a strong tendency to cover, by this "blanket term," a multitude of diagnostic inefficiency, or, I might say, at times, carelessness in certain cases. Also, it sometimes serves to prevent a display of our inability, wrongly thought of as a reflection, to be incurred, when we frankly admit to the patient that "we do not know." This feeling of the necessity of calling it "something" tends to defeat a carefully considered diagnosis in any case. The promiscuous use of the term announces our lack of knowledge of a disease attended by innumerable variations and cries out for a clearly defined syndrome to call influenza. Unfortunately this is lacking, but, with care, mistakes can be avoided, and our patients will be better attended as well as saved the anxiety and fear of influenza and its complications.

In talking to many physicians, I find a great divergence in opinion as to what constitutes a diagnosis of influenza. They range from the doubt that it constitutes a true entity, to an assurance that all upper respiratory infections with attending symptoms of absorption should be included. Several splendid physicians insist that they depend largely on the odor for diagnosis, in spite of the fact that most observers emphatically state that there is no characteristic fetor to influenza. These opinions lead me to think that a review of the subject is timely.

As defined in Tice's work, influenza is an acute, highly contagious, infectious disease occurring in pandemic, epidemic, and isolated form, characterized by sudden onset, fever, headache, marked prostration, respiratory symptoms, and a tendency towards severe pulmonary complications.

Cases of influenza are seen singly only under the rarest circumstances. A whole family or community is suddenly afflicted and we find in the literature such phrases as "God's wrath," "bad wind," and the belief that its origin was from clouds, star showers and earthquakes.

Historically, influenza epidemics probably occurred even in the dawn of civilization. There is some evidence of an epidemic as early as 1173. Indisputable evidence of one in Italy, France and Germany in 1387 is available, while evidence of a pandemic points to the year 1510. Another pandemic occurred in 1557, while one of the most severe, in terms of number stricken, and universal prevalence, occurred in 1580. Not until 1647 do we hear of the disease being mentioned in this country, by Noah Webster in his "History of Epidemic Diseases." It is of interest to note his statement that "such as were bled or used cooling drinks, died; such as made use of cordials or things more strengthening, recovered." Other epidemics occurred at frequent intervals up to that severe one of 1889, which was so similiar to that of 1918.

In spite of such opportunities as were afforded in 1918 by the war, with possible segregation, funds for study, medical knowledge, and discipline of subjects as in the Army, Navy, and by individuals, only a negative type of information has been added. Observations did show definitely, however, that the course of the disease is uninfluenced by weather, season, altitude, climate or atmospheric pressure. Neither is any race exempt, although the negro and yellow races apparently suffer higher mortality, which is partly due to hygienic lack. Sex and occupation play little or no part in its course, and all ages seem susceptible. It is found most prevalent, however, between the ages of fifteen and thirty-five, while infants are rarely affected.

Since 1893 Pfeiffer's bacillus, a short gram negative one, has held sway as the causative agent of influenza. Recently, however, much doubt has been thrown on this, and now there is a decided leaning to the theory of a filterable virus. There are others who think that the green producing streptococcus may be the agent. Long, Bliss and Carpenter, in 1931, were able to transmit clinical influenza to chimpanzees by swabbing their throats with bacteria free filtrates from the nasopharyngeal washings obtained from infected human patients.

Unguarded coughing, sneezing and expectoration are the chief modes of spreading, and occur most frequently in crowded and ill ventilated places.

The spacing of the epidemic, every two or three decades, leads to the conclusion that those who survived attacks in 1918 will be relatively immune to the disease. The relatively rare, so-called "susceptibles," together with those unaffected previously, including a new generation, will constitute the victims of the next epidemic.

There is nothing characteristic about the urine or spinal fluid. There is usually a normal red cell count of the blood, but a decided leukopenia exists. This low white cell count usually varies from 1,200 to 6,800 and, except in the presence of accompanying complications, probably invariably occurs.

The incubation period is about twenty-four hours, which accounts for the extremely sudden onset of the disease. This is not only sudden but usually very violent, the patient being literally stricken in his tracks while at work. Or they may awake, with chilliness varying from a mere sensation of cold to a rigor. The fever varies from 100 to 105 degrees, reaching a maximum on the third or fourth day and subsiding by clysis in five to eight days. Headaches are usually frontal, and in the eyes; there is associated backache and sore muscles, while joint pains are early, prominent and constant symptoms. About 90 per cent of the cases have some catarrhal inflammation of the upper respiratory tract Conjunctivitis and photophobia accompany pain of the eyeballs. The disease is not infrequently ushered in by nose bleeding, while jaundice, neuritic pains, and vomiting sometimes occur. The clinical picture of sudden onset, aching and profound prostration is nearly a constant one.

On physical examination the prostration of the individual, with splotches of cyanotic skin, is usually striking. The mucosa is red and dry, the fauces congested, and the lymphoid plaques of the pharynx are red and angry. By the simple expedient of using a pharyngeal mirror, the mildly contagious naso-pharyngitis can usually be distinguished from the above picture. Cervical adenitis rarely occurs in influenza, while it is usually present in follicular pharyngitis. Rales in the chest should be viewed with suspicion, as they may mean a tracheobronchitis, which is often a forerunner of pneumonia. Hemoptysis rarely occurs except where complications are present, but there may be a slight tinge to the sputum with a tracheobronchitis. Other physical findings vary with the complications which may arise.

Convalescence from influenza is quite characteristic and is one of the most important aspects of any study of the disease. Weakness with prostration and anorexia persist much longer than in most febrile conditions, and drenching sweats may occur at any time, day or night, for weeks Palpitation often occurs and tachycardia may be a troublesome sequela.

Many physicians seem to think that bronchopneumonia is the only complication to influenza, but, while this is a most serious condition, otitis media, sinusitis, etc., often occur. Thayer and McCrea state that influenza causing organisms frequently linger in the heart muscle, and point out that slowness of regaining "pep," lowered blood pressure, etc., following lack of care during convalescence may be explained in this way. Also, it has been pointed out that the great increase in heart and circulatory diseases in the past decade may be the results of myocardial involvement during influenza, but escaping notice at time of disease.

There is nothing characteristic about the pathology other than that of its complications.

Treatment is largely symptomatic, with rest in bed for some time after the temperature has become normal. This latter is of utmost importance. Stimulation, the ingestion of much fluid, and free elimination are important. There seems to be little gained by the use of sera and immunogens in this condition, while in the simple infections some value may be expected.

From this superficial discussion of our present vague knowledge of so broad a subject, it is evident that no definite conclusions can be drawn. It might be said, however, that many cases called "flu," after incomplete study, might be more properly catalogued if the following facts are remembered:

1. Isolated cases of influenza are rarely seen.
2. Patients surviving an attack of the disease are relatively immune to reinfection.
3. The use of a pharyngeal mirror will show in the naso-pharynx follicular infection in cases of naso-pharyngitis, while the pharynx is usually red in influenza.
4. Cervical adenitis is usually absent in influenza.
5. A sudden onset, profound prostration, muscular aching, including backache and eye-

ache, together with leukopenia, form a picture which is nearly, though not always, constant in influenza.

In this way some of the confusion of the term influenza, and much of its gross misapplication, may be obviated.

## NASAL PATHOLOGY AS A NON-SPECIFIC FACTOR IN THE TREATMENT OF INHALANT ALLERGY.*

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As long as hay fever was considered a local disease its treatment came within the province of the rhinologist. With the conception of hay fever and vasomotor rhinitis as an allergic manifestation, the internist—more recently the so-called allergist—felt that these conditions belonged in his sphere of therapy.

Twenty-five years ago asthma might have come within the field of any of several specialists and as a matter of fact each really wished that it fell in the other man's field. The work inaugurated in 1903 by Brodie and Dixon, amplified by Ransom, Sluder and Myers and itself amplifying the earlier work of Longet, Franck and Sandemann, demonstrating the presence of an asthmogenic nasal area and a bronchospastic response, placed the treatment of asthma for a time in the hands of the rhinologist. Here, again, allergic studies later indicated that asthma is a systemic disease and that basic therapy should be systemic and based upon prevalent immunologic concepts.

As a consequence, the last few years have witnessed the appearance of two general groups of clinical studies. The first has been contributed to by those enthusiasts both in otolaryngology and in allergy who have believed that their specialty alone possesses the key to cure. Each has produced statistics of good results. These are sometimes startling in the high percentage of cures by the method advocated, figures which are not supported in the experience of other workers in the same line.

The second group of contributions has been from those who realize that respiratory allergy is a much more intricate problem than is indicated by such simple phrases as antigen-antibody reaction or asthmogenic areas, who have realized that a variety of factors may interact in the production of symptoms and that best results will probably ultimately be obtained from a collaborative study in which the several interacting factors are brought under control.

Various statistics on the rhinologic aspects of allergy are available but these are of value only in a rough way, as showing general trends, and cannot at the present time be used as reliable measures of the effectiveness of any one method of treatment. The discrepancies in different reports are too great. A statistician would say that, balancing the variations in results against the gross total of cases reported, there is no evidence of correlation whatsoever. Thus, one would find considerable difficulty in reconciling Tobey and Rackemann's[2] conclusion that nasal surgery gives permanent relief in only 5 per cent with Smith's report[7] of 74 per cent cure and 26 per cent marked improvement following his methods of nasal surgery. Furthermore, in the field of nasal surgery itself, the lack of uniformity of surgical methods precludes direct comparison. However, an unbiased study of the available reports will give us a very clear idea of the problem in hand and of present trends in therapy.

It has been said that the high incidence of sinus infection in asthma and vasomotor rhinitis victims justifies the contention of an etiologic association. There is no denying the high incidence.

Francis[1] found gross nasal abnormalities in only 14 per cent of his asthmatics, while Matthews[2] reports upper respiratory tract pathology in 90 per cent. Table I shows that

Table I—Percentage of Asthmatics Showing Sinus Disease or Gross Nasal Pathology (Review of Literature)

| AUTHOR | Reference Number | Date | Number of Cases | Findings | Pathology Per Cent |
|---|---|---|---|---|---|
| Francis | 1 | 1929 | 402 | N.P. | 14 |
| Gottlieb | 1 | 1925 | 117 | S.D. | 26 |
| Lublinski | 1 | ..... | 500 | N.P. | 29 |
| Gill Cary | 1 | 1930 | 110 | S.D. | 50 |
| Adam | 3 | 1900 | 640 | N.P. | 60 |
| Dundas Grant | 2 | 1913 | 107 | N.P. | 63 |
| Tobey | 2 | 1929 | 1000 | N.P. | 65 |
| Schenck & Kern | 4 | 1929 | 18 | N.P. | 67 |
| Vaughan | 22 | 1932 | 154 | N.P. | 71 |
| Hansel | 5 | 1925 | 400 | S.D.* | 75 |
| Kern & Donnelly | 6 | 1932 | 200 | S.D.** | 80 |
| Smith | 7 | 1929 | *** | S.D. | 82 |
| Matthews | 2 | 1914 | 300 | U.R.L. | 90 |

*Lipiodol positive; **X-ray studies positive; ***Not stated. S. D.—Sinus disease; N.P.—Gross nasal pathology; U.R.L.—Lesions of upper respiratory tract.

*Presented before the Oklahoma City Clinical Society, November 1, 1932.

almost any figures between these two extremes can be and have been reported. The reported incidence of sinusitis complicating asthma in children gives even greater variation, the three available reports showing 6 per cent, 41 per cent, and 100 per cent (Table II). One might

Table II.—Sinusitis in Asthmatic Children

| AUTHOR | Reference Number | Date | Number Cases | Findings | Per Cent |
|---|---|---|---|---|---|
| Bullen | 1 | 1930 | 235 | S.D. | 6 |
| Chobot | 1 | 1930 | 100 | S.D. | 41 |
| Lierle | 1 | 1926 | 20 | S.D. | 100 |

argue that with improved methods of examination the incidence of positive findings is becoming higher, but the dates of the reports controvert this interpretation.

If we are to attempt to draw any conclusions from these diverse figures, we can only say that sinusitis or gross nasal pathology occurs in a varying percentage of asthmatics.

Those who feel that the higher figures are more likely to be correct will be interested in the observations of Kern and Donnelly[6] on 200 asthmatics and fifty so-called normal controls. The latter were non-allergic individuals in the same age brackets and living in the same districts. Eighty and five-tenths per cent of the asthmatics showed X-ray evidence of sinus disease, and 72 per cent of the "normal controls" showed similar findings. As a matter of fact, this type of parallel study is the only one that will bring us reliable information. These figures are probably of more value in our present study than all of the preceding estimations combined. Kern and Donnelly also observed that the average number of sinuses affected per patient was 4.14 for the asthmatics and 3.9 for the non-allergics. Their observations give some justification to the conclusion that the incidence of sinus infection is slightly greater among chronic asthmatics than among non-allergic individuals, and that this infection when present is likely to be somewhat more diffuse. The difference, however, is not great.

Some claim that the fundamental cause of hay fever as well as asthma is nasal pathology, more particularly sinus infection. Carmody and Greene[1] go so far as to state that without infection in the sinuses and without pathological membranes, pollen, dust and similar irritants will not produce hay fever. Kern and Donnelly, however, find that the incidence of X-ray evidence of sinus infection is the same in non-allergic controls and in individuals with seasonal hay fever or asthma. The per cent in the former is 72 and in the latter 74.4. The inference is obvious that, although nearly three-fourths of persons with seasonal respiratory allergy show evidence of past or present sinus involvement, three-fourths of non-allergics show the same findings, and the cause of hay fever and asthma must therefore be searched for elsewhere. When non-allergics have the same nasal disease in the same frequency as allergics, there must be an additional factor, such as an allergic state: otherwise, three-fourths of both groups would have hay fever or asthma.

Our next group of figures leads us to similar conclusions. We have been discussing the frequency of nasal pathology in persons with asthma and hay fever, and in non-allergic controls. Let us study for a moment the frequency of asthma in persons with nasal pathology. Goodhart and Spriggs[3] found that only 7.5 per cent of their chronic nasal cases were asthmatics. In 360 cases with nasal polyps Becker[1] found that nine had asthma. Hering[1] found seven asthmatics in 200 cases, and Schmiegelow[1] thirty-one asthmatics in 139 cases with polyps. The latter author observed forty asthmatics in 502 cases of chronic rhinitis. In 699 cases of polyps, therefore, there were only forty-seven asthmatics. Obviously, again, polyps alone do not cause asthma. In the individual with polyps, there must be in addition some predisposition, and this we call the allergic state.

One cannot gainsay that certain cases of hay fever, vasomotor rhinitis and asthma are relieved, occasionally permanently, by rhinologic therapy alone, just as others are by allergic treatment only. Indeed, it is the fact of these occasional excellent results which keeps up the argument. As a matter of fact, equally good results are sometimes obtainable in the same patient by either method.

Comparable successes from different methods are not limited to respiratory allergy. Take the child with an allergic food dermatitis. The allergist relieves him by discovering and removing those foods to which the child is specifically sensitive. The pediatrist accomplishes the same end, in a non-specific way,

by restricting the fat or salt or carbohydrate or protein intake, to lessen the general metabolic overload. The dermatologist is equally successful with protective ointments which either soothe or stimulate the tissues as desired. Even the roentgenologist can produce temporary cure by his altogether different method.

It was to explain these and similar observations that in 1923 I[8] developed my concept of a balanced allergic state. Knowledge of sensitization has carried us a long way in the treatment of respiratory allergy and has provided another step in our understanding of the process, but it has not yet explained the fundamental difference between an allergic and a non-allergic. Granted that some persons are allergic and others are not, granted that we understand in a general way what happens on contact with the offending allergen, we do not yet know why some are hypersensitive and some are not. We know there is an inherited predisposition and we speak of autonomic imbalance, but from this point we must proceed with conjecture only. Whatever else may be at work the physiologic response is manifested with evidence of an imbalance of the vagus autonomic and sympathetic systems. What will cause this response? Usually, contact with an allergen to which the individual is specifically sensitive. True, one may show evidence of sensitization to a certain allergen and yet not manifest symptoms on contact with that allergen. Such a person is in a balanced allergic state or a state of allergic equilibrium. He can stand moderate doses of the allergen without upset of the normal physiology. This balance can be overthrown by an overdose of the allergen or by additional contact with other allergens to which the patient is sensitive. Or it may be overthrown by non-specific factors, which together with the specific factors form sufficient overload to overturn the balance. The non-specific factors are numerous; to mention but a few, constipation, fatigue, nervous exhaustion, mechanical irritation, acute or chronic infection, sinusitis, nasal obstruction.

Given an allergic individual, in contact with some allergen to which he is sensitive, who also has a chronic sinus infection, as I see it both factors may be at work in the production of symptoms. While symptoms persist the balance is overthrown. The metabolic overload may be relieved sufficiently to reestablish balance by treating either the specific factor or the non-specific factor. Sometimes both must be adjusted. Our experience has been that by far the more important of the two is the specific factor.

Accepting the idea that a case of respiratory allergy may logically be treated either specifically or non-specifically, let us attempt a comparison of the results from the two methods. In seasonal asthma and hay fever the results from specific therapy are outstanding. No other method has equalled this in giving satisfactory relief (75 per cent or better) to from 85 to 92 per cent of cases; and practically complete relief (90 per cent or better) in from one-half to two-thirds of cases.

When we come to asthma not due primarily to pollens and not strictly seasonal, a comparison of results (Tables III and IV) is again

Table III.—Results of Rhinologic Treatment in Asthma

| AUTHOR | Reference Number | Number Cases | "Cure" | Good | Both |
|---|---|---|---|---|---|
| Kahn..... | 2 | N.S. | 0 % | 0 % | 0 % |
| Heatley & Crowe.... | 2 | 62 | 1–5% | 0 % | 1– 5% |
| Rackemann. | 2 | Review of Literature. | 5 % | 10–20% | 10–20% |
| Bray..... | 1 | Review of Literature | 14 % | ..... | ..... |
| Stout..... | 2 | Polyps | 11 % | ..... | ..... |
| | | Sinuses | 22 % | ..... | ..... |
| Leopold & Fetterolf.. | 2 | 24 | 20 % | ..... | ..... |
| Tod..... | 1 | 202 | 10 % | 49 % | 59 % |
| Lierle..... | 2 | 21 | 10 % | 81 % | 91 % |
| Smith..... | 7 | N.S. | 74 % | 26 % | 100 % |

N. S.—Not stated.

Table IV—Results of Allergic Treatment in Asthma

| AUTHOR | Reference Number | Number Cases | "Cure" | Good | Both |
|---|---|---|---|---|---|
| Walzer..... | 9 | Review of Literature | 20–30% | 25–35% | 45–65% |
| Rackemann. | 2 | 425 Extrinsics | 25% | 57% | 82% |
| | | 499 Intrinsics | 18% | 52% | 70% |
| Vaughan... | 22 | 99 Extrinsics | ..... | ..... | 68% |
| | | 55 Intrinsics | ..... | ..... | 27% |
| Clarke..... | 2 | ..... | 20% | 41.7% | 61% |
| Menaugh... | 2 | 300 | 28.3% | 27.7% | 56% |
| Rowe..... | 2 | 110 | 68.3% | 22.7% | 91% |
| Alexander & Zeek..... | 11 | 69 Uncomplicated | ..... | ..... | 90% |
| | | 123 Complicated | ..... | ..... | 24% |

rather confusing. Here again we find no uniformity in figures. In boxing terms, it is "anybody's battle."

Can these discrepancies be reconciled? I believe that they can, and many serious investigators in otolaryngology and in allergy are now cooperating to this end.

In the first place, one would not expect any uniformity of results. Each of the groups studied is necessarily a selected series. The selection has been automatic, depending upon the type of work in which the specialist is particularly interested. As a rule there has been no attempt at classification by age or duration of the disease nor in accordance with the specific causative agent. There can be no doubt that both the otolaryngologist and the allergist should collaborate in the study of the individual case. Certain cases are treated with greatest success with allergic methods, others with local therapy, and still others respond best to a combination of the two. Specific allergic excitants cannot be found in all cases of asthma or vasomotor rhinitis. We choose to classify those in which a specific excitant has not been found as bacterial allergics. At present it cannot be stated positively that specific bacterial sensitization is the etiologic agent in this group. Rackemann has made a very happy classification of his cases into extrinsic, in which specific excitants from outside the body are demonstrable; and intrinsic, in which infection or some obscure metabolic or nervous factor appears to be the predominating agent. In this latter group a specific causative allergen is usually not demonstrable.

Alexander and Zeek's results[11] (Table IV) are most instructive in this connection. Among the uncomplicated asthmatics (presumably extrinsic) 90 per cent obtained satisfactory relief from allergic methods of therapy. In the complicated cases, presumably the intrinsics and those extrinsics complicated by organic pathology, only 24 per cent obtained satisfactory relief from allergic methods alone. The conclusion appears obvious that it is in the intrinsic and complicated cases that the rhinologist will find his greatest field of usefulness. He may possibly be of assistance in an additional 10 per cent of the extrinsic uncomplicated cases. This conclusion is borne out in Rackemann's report[2] of the end results with and without operation in 475 patients with a focus of infection. A number of cases in both groups, extrinsics and intrinsics, were subjected to surgery. They all received allergic therapy also. Taking the cases both allergically and surgically we find that for every eighty-six extrinsic cases adequately relieved, 102 intrinsics received comparable relief. Somewhat better results are obtained therefore following surgery in the intrinsics than in the extrinsics. Rackemann found in a survey of over a thousand patients with asthma that about 46 per cent were intrinsic cases. Harkavy and Maisel[12] reached essentially similar figures in a study of 409 cases, in whom they found 47 per cent non-sensitive. In their non-reactive cases they believed that the underlying cause of the asthma was sinus disease in 87 per cent. Other causes included bronchiectasis and unresolved pneumonia. The writer found 36 per cent of his chronic asthmatics to be intrinsic (Table V).[22]

TABLE V.—Distribution of 154 Asthma Cases with Results of Treatment

| RESULTS | Extrinsic 99 Cases (64%) | Intrinsic 55 Cases (36%) |
|---|---|---|
| Excellent | 38.4% | 10.9% |
| Good | 29.3 | 16.4 |
| Fair | 15.1 | 10.9 |
| Poor | 15.1 | 52.7 |
| Bad | 2.1 | 9.1 |
| Excellent, Good | 67.7% | 27.3% |
| Excellent, Good, Fair | 82.8% | 38.2% |

In summarizing this portion of the discussion, 55 to 65 per cent of chronic asthma and vasomotor rhinitis is due to extrinsic causes. In this group 80 to 90 per cent are relieved by allergic methods only. Except possibly in the remaining 10 to 20 per cent there is no need for nasal surgery or any other form of non-allergic therapy. Indeed, in this group nasal surgery does no good. Thus, Rackemann finds in a series of 271 unselected cases (intrinsic and extrinsic) with complicating sinus infection 60 per cent were relieved (improved or cured) with allergic therapy plus surgery, but 69 per cent in the same group were relieved with allergic therapy alone.

Again, Kern and Donnelly found that in seasonal hay fever and asthma, just as good results were obtained from specific treatment alone in those cases with sinus disease as in those without. The presence of sinus infec-

tion, untreated, in no way interfered with good specific results.

Again, Rackemann observed in a series of 475 patients with focal infection that 79 per cent of those operated upon were relieved by allergic methods, and 77 per cent of those not operated upon were relieved by the same method. The operation may produce no definite improvement in the end results.

Sinus infection complicating an extrinsic allergy should, therefore, not be submitted to surgery until after specific therapy has had a very thorough trial. In this 55 to 65 per cent of all asthma and vasomotor rhinitis cases, the nasal pathology is not the cause and its removal will not influence the results as long as the extrinsic allergen is still active. I will modify this by saying that obstructive nasal pathology such as polyps or septal contact should sometimes be removed, to promote ventilation, and an outspoken active sinus infection will probably require treatment *per se* irrespective of any possible connection with the allergic state. But it is in the intrinsic allergies, the so-called infectious or bacterial allergy, that we now place our greatest hope of successful collaboration between the allergist and the otolaryngologist. The represents 35 to 45 per cent of cases. A small proportion of these appear to be true cases of reflex asthma from nasal pathology. Others are certainly relieved following nasal surgery. Our efforts should be concentrated on a collaboration in the two fields in an attempt to improve our results with these unfortunate so-called non-sensitive patients.

There appears to be little agreement among rhinologists as to the surgical procedure of choice. Methods advocated vary from the simple Dowling pack, through removal of polyps, turbinectomy, radium, cauterization and antral washing, to radical sinus surgery, the Caldwell-Luc operation and the denudation advised by Smith.

It may be presumptuous on the part of the allergist to suggest the local procedure of choice, but since he observes so many of the end results his opinion may be of some value. He sees so many who have been subjected to more or less mutilative nasal surgery without benefit that he has already voiced a protest. Lintz[1] has decried the fact that over 30 per cent of his asthmatics have already been operated upon without benefit. Rowe[13] reported that 110 of his patients had had a total of 169 previous operations on the nose and throat without benefit. Piness and Miller[14] reported that in 834 asthmatics 49 per cent had 704 operations without success. Three hundred and twenty-seven had had tonsillectomy and 186 had had nasal operations. There were 372 internasal operations, an average of two per patient. In my own series, allergic therapy was successful in but 35 per cent of those cases showing nasal pathology who had previously been subjected to surgery. The results were much better (59 per cent) in those showing nasal pathology which had not been treated surgically. But best results were obtained (68 per cent) in those without nasal pathology (Table VI).

Table VI.—Nasal Pathology as a Factor in Recovery 132 Cases

| | Number Cases | Per Cent of Group | Number Relieved Allergically | Good Results Per Cent |
|---|---|---|---|---|
| Nasal pathology treated..... | 40 | 30.3 | 14 | 35.0 |
| Nasal pathology not treated..... | 54 | 40.9 | 32 | 59.3 |
| No nasal pathology.. | 38 | 28.8 | 26 | 68.4 |

In these three series operations had been performed without preliminary classification into extrinsic and intrinsic groups and without preliminary trial of allergic therapy. With proper sorting of cases and collaboration between rhinologist and allergist there should be fewer unnecessary operations and a higher percentage of success from those operations which are performed.

The allergist takes an attitude of conservatism as a consequence of his experience with cases that have already been subjected to nasal surgery. Polyps, which are the result rather than the cause of allergic symptoms, should usually be removed and obstruction relieved. Unless there is contact or pressure, submucous resection is rarely indicated. Turbinectomy, destroying as it does some of the heating surface of the nose, exposes the lower respiratory tract to colder, rawer air which may in time produce a consequent exacerbation of the asthma. Sinus irrigation should be tried before more radical surgery. On the other hand, if there is actual sinus pathology and the more conservative methods fail, I then favor radical surgery, even though, as has been shown by Kern and Schenck,[15] most asthmatics suf-

fer a recurrence after months or a few years of freedom, even following radical sinus operations.

Conservatism at first, with an attempt to restore the tissues to normal, to be followed if necessary with more radical surgery: This is tantamount to saying that the treatment of the nasal pathology should follow the same line as the treatment of similar nasal pathology in non-allergic individuals, provided the patient has first received the benefit of competent allergic study and therapy.

A person with allergic personal or family history should not be subjected to surgery during the pollen season. Huber finds[16] that 10 per cent of his respiratory allergics date the onset of their symptoms from an operation on the nose or throat. Theoretically, certainly, a large raw surface promotes pollen absorption and might result in sensitization.

With rare exceptions tonsillectomy is of no preventive or curative value. Bullen[17] has found that in 1,000 school children who had been subjected to tonsillectomy ten years previously, forty-one had developed allergic coryza or asthma. Among 1,000 who had not been subjected to tonsillectomy, thirty-six, almost the same number, had developed allergic coryza or asthma. Among 600 patients with asthma and hay fever, 300 had had tonsillectomy and 300 had not. Allergic therapy was also given to both groups. Relief was obtained in 66 per cent of the operated group and in 69.4 per cent of the non-operated group. Stout[2] reports similar results with 65 per cent relieved without tonsillectomy and 66 per cent with tonsillectomy. Peshkin[18] found that tonsillectomy in 100 asthmatic children gave relief in 1 per cent and produced exacerbation in 3 per cent.

There is a characteristic allergic picture in the nose with which the rhinologist should be acquainted so that he may know when to call upon the allergist for collaboration. Time does not permit detailed discussion of the local findings. These have been admirably presented by Hansel,[19] and I shall content myself with brief quotations from his report.

"The history of paroxysms of sneezing, nasal obstruction, and nasal discharge is strikingly characteristic. The examination reveals the edema and generalized hyperplasia of the mucous membrane, thin or thick mucoid discharge, nasal polypi and the finding of eosinophils in the nasal secretion. The sinuses show edema of the mucosa, polypi and mucoid secretion. Primary suppurative conditions with edema and polypi should be distinguished from primary allergic cases with secondary infection. The pathologic changes in allergy are almost always bilateral. Primary suppuration is usually unilateral but may be bilateral. Hyperplasia and polypi are confined to the region of the ostia of the affected sinuses and there is an absence of the generalized discoloration of the membrane as seen in allergy. Roentgen ray examinations of the sinuses with and without lipoidal will often show the presence of edema, retained secretion and polypi. Diagnostic puncture of the maxillary sinuses may or may not reveal the presence of secretion. The capacity of the antrum may be measured by the amount of fluid injected before return flow begins. No return flow from puncture and irrigation may suggest that the sinus is filled with very thick secretion polypi, or edematous mucosa."

Where the nasal picture suggests allergy, the secretion may be examined for eosinophils. Eyermann[20] found eosinophils in 72 per cent of allergic nasal secretions and in 9 per cent of non-allergic secretions. Cohen and Rudolph[21] consider it a safe rule to regard a smear of nasal secretion showing 10 per cent or more of eosinophils as diagnostic of allergy. The finding of a positive allergic family history, or a personal history of other allergic manifestations (hay fever, asthma, urticaria, periodic headaches, eczema, food idiosyncrasy) gives further confirmatory evidence of an allergic state. Cutaneous sensitization studies establish the diagnosis, particularly in extrinsic cases.

We no longer speak of cure in the allergic diseases. The basic state is a chronic inherited condition. Any series of results from whatever method, if followed over a sufficient number of years will show ultimate recurrence in a gradually increasing number of individuals. We have by now acquired sufficient understanding of the processes of respiratory allergy so that the allergist and the otolaryngologist, instead of arguing at cross purposes on the relative merits of their therapeutic methods, can and should cooperate to the material advantage of the patient.

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*Professional Building.*

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Thank God every morning when you get up that you have something to do which must be done, whether you like it or not. Being forced to work, and forced to do your best, will breed in you temperance, a self-control, diligence, strength of will, content and a hundred virtues which the idle will never know.—*Kingsley.*

## MANAGEMENT OF CONGENITAL CATARACTS, WITH REPORT OF ELEVEN CASES.*

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In this series of eleven cases of congenital cataracts, the management of which is to be discussed, is included cases of true congenital cataracts, e. g., cataracts developing before birth; and cases of juvenile cataracts, e. g., cataracts of non-traumatic origin developing after birth but before or during adolescence.

Under the group congenital cataract is usually included five types, namely: (1) anterior polar cataract, (2) posterior polar cataract, (3) perinuclear (zonular or lamellar) cataract, (4) fusiform cataract, and (5) central cataract. Of these five types, the last three only are included in our series, as they interfere with vision and require operative treatment. The first two types, namely, anterior polar and posterior polar cataracts, as a rule interfere but little with vision, are stationary, and require no treatment.

Congenital cataracts of the perinuclear, fusiform or central types, if allowed to remain undisturbed, will, like other classes of cataracts involving the lenticular substance proper, undergo a certain amount of shrinkage and absorption. This phenomenon was observed in our series of cases. Those cases seen during the first few years of life showed cataractous lenses of approximately normal size and shape, while those observed later in life showed different degrees of absorption, some showing little more than a shrunken capsule containing a small amount of opalescent fluid.

Congenital cataracts are usually bilateral; however, occasionally they are unilateral. We are fortunate in having in our series one case (No. 2) of unilateral congenital cataract which, as far as we can learn, was present at birth and was not of traumatic origin. It is generally accepted that heredity plays a large role in the occurrence of congenital cataracts; however, it is often impossible to prove any hereditary influence and the case apparently is sporadic. Cases No. 5 and No. 8 are sisters and give a history that the mother, younger brother and another sister have poor vision which, according to the description given,

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must be due to congenital cataracts. Case No. 1 is interesting, in that the patient is one of twins; the other twin has normal eyes and the family history is negative as far as we can learn.

As to the time of treatment and as to the kind of treatment all ophthalmologists seem to agree; but as to the type of operation there is a difference of opinion. All cases of congenital cataract in which the cataract is dense enough to obstruct vision should be operated upon during the first few months of life so that the retina will develop and amblyopia ex anopsia will not occur. It is usually possible to operate under local anesthesia. As to the type of operation, most men advocate discission through the dilated pupil; however, some few advocate iridectomy and expression of the lens, arguing that there is less chance of the patient having an irritable eye. In performing the discission operation some advocate needling the anterior capsule alone, while others advocate passing the knife needle through the entirety of the lens and posterior capsule into the vitreous body, stating that absorption is more complete and that the necessity for further operations is rare. Our procedure has been to needle the anterior capsule in cases in which the cataractous lens has not shrunk, and to needle both anterior and posterior capsule in cases with shrunken cataractous lenses. It can be seen by the chart that some cases required but one needling, while others required repeated operations.

In congenital cataract cases we consider the pre-operative preparation of the patient and the post-operative treatment of the case just as important as the operation itself. Our pre-operative preparation consists of taking a smear from the eye the day of operation. Should the smear show organisms, the eye is treated until the smear is negative before any operation procedure is attempted. About one hour before operation the pupil is thoroughly dilated with atropin. Thirty minutes before operation the eye is anesthetized with butyn, and two drops of 1 per cent silver nitrate solution is instilled. Upon taking the patient to the operating room the eye is anesthetized with 4 per cent cocain and adrenalin drops, and a subconjunctival injection of novocain. Immediately before operation one drop of 2 per cent mercurochrome is instilled and the eye irrigated thoroughly. Immediately fol-

| Case No. | Age | Family History | Eye | Vision | Number of Operations | Results |
|---|---|---|---|---|---|---|
| 1. | 4 mo. | Neg. | O. D.<br>O. S. | ?<br>? | 1<br>None | Clear pupil<br>Not operated upon as yet. |
| 2. | 1 yr. | Neg. | O. D.<br>O. S. | Normal lens<br>? | .....<br>1 | .....<br>Clear pupil |
| 3. | 7 yrs. | Neg. | O. D.<br>O. S. | Fingers<br>Light | 1<br>1 | Count fingers at 20 feet.<br>Count fingers at 20 feet. |
| 4. | 10 yrs. | Neg. | O. D.<br>O. S. | Aphakia<br>Light | <br>1 | Cataract needled 2 years ago.<br>Count fingers at 20 feet. |
| 5. | 10 yrs. | Pos. | O. D.<br>O. S. | Fingers<br>Light | 1<br>1 | Thin membrane.<br>20/200+ |
| 6. | 11 yrs. | Neg. | O. D.<br>O. S. | Anophthalmia<br>Fingers | .....<br>2 | Enucleated as result of previous operation.<br>Count fingers at 20 feet. |
| 7. | 14 yrs. | Neg. | O. D.<br>O. S. | Fingers 4 feet<br>Phthisis bulbi | 1 | 20/40+ with correction.<br>Result of previous operation. |
| 8. | 18 yrs. | Pos. | O. D.<br>O. S. | Hand movements<br>Fingers 2 feet | 2<br>1 | Hand movements at 20 feet.<br>Count fingers at 20 feet. |
| 9. | 18 yrs. | Pos. | O. D.<br>O. S. | Light<br>Fingers | 2<br>1 | Hand movements at 20 feet.<br>Count fingers at 20 feet. |
| 10. | 20 yrs. | Pos. | O. D.<br>O. S. | Fingers<br>Fingers | 1<br>1 | Count fingers at 20 feet.<br>Count fingers at 20 feet. |
| 11. | 22 yrs. | Neg. | O. D.<br>O. S. | Fingers 2 feet<br>Light | 5<br>3 | 20/20 with correction.<br>20/20 with correction. |

lowing operation, 1 per cent atropin is instilled, 10 per cent boric acid ointment applied, and both eyes bandaged for twenty-four hours. The eye is redressed each day for three days, atropin being instilled at the time of each dressing. As a rule the patient is allowed to get out of bed after forty-eight hours. Upon discharge from the hospital the patient is instructed to bathe the eye with hot boric acid compresses and instill 1 per cent atropin solution three times daily. It is important to observe the patient at frequent intervals, making certain that the pupil is thoroughly dilated. Should absorption of the lens be taking place, the patient is allowed to continue the treatment over a period of weeks. Should the tension increase, a paracentesis is done to relieve tension. As soon as the soft lens matter ceases to absorb, a second operation is done.

### Conclusions

As is shown from the chart, we have never, as yet, had a case to become infected. We attribute this to our careful pre-operative preparation.

Many of our cases were very old before operation and it is impossible, as yet, to determine the amount of vision that they will secure; however, we consider our results as satisfactory in that these patients had to be lead about before operation and now they can walk about the streets alone and are able to recognize faces.

Cases Nos. 3, 4, 5, 6, 7, 8, 9, and 10 were all from the Virginia School for the Deaf and Blind, Staunton, Va., and had learned the Braille system of reading. All of these eight cases except No. 7 had never seen their mother's face. Now they can recognize people by sight and can help about the house.

Case No. 11 showes a vision of 20/20 in each eye with correction. This is a case of juvenile cataracts which developed after she was able to read and write; thus her retina had developed normally and the result is very striking.

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## THE MAXILLARY ANTRUM AND ITS DENTAL NEIGHBOR.

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When two countries of different nationality, language, and form of government have a certain extent of common boundary, border disturbances of greater or less seriousness are inevitable.

Rhinology and odontology are two entirely distinct and dissimilar specialties, each with its own peculiar code of principles and practice.

It happens, however, that their respective provinces are in a certain important section contiguous and overlapping.

This common meeting ground is the alveolar process of the maxilla.

Above lies the large maxillary antrum communicating by a small opening with the nose and lined with a mucous membrane directly continuous with that cavity. It forms one of the group of so-called paranasal sinuses, and is pathologically, as well as anatomically, a part of the nasal apparatus.

The thickened lower border of the maxilla serves for the implantation of the upper teeth, and constitutes, therefore, a major field for dental operation.

With the maxilla in this manner partitioned off between two neighboring specialities, we might expect a certain kind of border troubles to arise here also, especially in the form of disputes as to the origin of diseased processes and the best way of attacking them.

As a basis for discussion, let us recall some of the salient points in the anatomical relationship of the parts.

The maxillary antrum is a cavity hollowed out of the body of the maxillary bone, having in general the form of an irregular pyramid with its base toward the nose, but like the other paranasal sinuses, varying greatly in form, size and extent.

The average normal sinus has a vertical diameter of one inch and a half, a transverse of one inch, and has a capacity of about one-half ounce, or one tablespoonful of fluid.

There are three walls of great clinical importance: the roof which separates it from the orbital cavity, and the inner wall, partly membranous, which separates it from the nasal cavity, and the floor which separates it from the oral cavity.

It is with the last mentioned that we are here particularly concerned, because it is through this that the antrum is brought into relation with the teeth. In fact, ridges or irregular conical projections are frequently to be seen in the floor due to the upward extension of the fangs of certain of the upper teeth.

The anterior limit of the sinus is fixed by an imaginary line run vertically upward from the center of the canine and the posterior limit by a similar line from the back of the last molar; however, on account of a slight upward curvature of the floor before and back, not all the teeth lying below it are equally distant from it.

The three teeth whose roots are regularly in closest proximity are the first and second molar and the second bicuspid.

Sometimes the roots of one or the other of these will completely penetrate the floor and be separated from the cavity by nothing more than a layer of its mucous membrane.

A drill driven upward through the socket from any of the three is practically certain to enter the sinus of normal size and location; and in most cases, this is also true with regard to the last molar, and exceptionally also of the first bicuspid.

Attention must be drawn to the fact that the positional relationship of the teeth to the antrum differs in a marked degree in different types of skull formation. Fortunately there are some dependable guides in the matter.

In individuals having the high arched narrow formation of the hard palate, you can count upon an accompanying high thick alveolar process and a great amount of intervening cancellous tissue separating the roots of all the teeth from the antral floor.

The conformation of the facial wall of the maxilla is also a significant and valuable guide. In case of marked incurvation in the anterior part of this wall, it is never safe to attempt to enter the sinus through the socket of the second bicuspid, for the chances are that it will emerge on the outer surface of the maxilla.

The rhinologist may get an additional hint by rhinoscopic examination. If there is much outward bulging in the anterior part of the inferior meatus, it indicates a narrowing of the anterior part of the antral cavity, and, in extreme cases, actually a coalescence of the nasal and antral wall in this locality.

Unfortunately, this important anomaly is apparently unknown to certain meddlesome operators who have adopted as a fad the habit of puncturing the antrum by way of the canine fossa.

We know of more than one case in which the puncturing instrument, instead of entering the antrum as was intended, has pierced directly through into the nasal cavity.

The infra-orbital nerve which supplies sensory fibres to both the antrum and the teeth naturally constitutes a link of union between two neighbors.

The main trunk as it courses along the roof may, instead of being confined within a bony canal, lie free within the cavity, covered only with a layer of mucous membrane.

This may be true also of the branches which pass in more or less fan-like form down the anterior and lateral wall to supply the upper teeth.

In operations, therefore, on the interior as well as on the outside, one must take into account the possibility of the injury of these nerves.

In the so-called Caldwell-Luc radical operation on the antrum, it is necessary to remove a sizeable button of bone from the facial wall.

Enough bone must be taken away to give good access to the cavity, but the operator must take care not to go so far upward as to include the infra-orbital foramen, and it is even more important not to go so far downward as to expose the roots of the teeth.

One of the questions of antro-dental relations, on which there has been much dispute, is as to how much of a role the teeth play in the causation of antral disease.

The estimates vary all the way from the neighborhood of 10 to 60 per cent, dentists usually championing the higher figures. The association of abscessed roots of teeth with suppurative diseases of the antrum is without doubt a common occurrence, and justifies the suspicion of cause and effect, but we are certain that it does not justify the sweeping conclusion that in all these cases the cause lies on the dental side.

It must not be forgotten that the maxillary antrum is altogether analogous to the other paranasal sinuses, and that these other sinuses are frequently affected with suppurative disease. There is no reason, accordingly, why the antrum cannot derive its infection from the

same cause as the frontal or the sphenoidal where there is no question of a dental etiology.

It is, therefore, not necessary to conclude that in all cases in which the antrum and teeth are concomitantly affected that the process could only have been an ascending one.

If it can be proved that the diseased tooth antidates the diseased antrum, the dental causation may well be conceded; but this is often difficult to prove.

Antrum disease may develop insidiously as may carious processes in the teeth, and it is quite possible for a patient to go about many years with an antrum cavity filled with pus and be unaware of it.

Some approach to a solution of the question could probably be obtained in a statistical way by comparing the frequency of suppuration of the maxillary sinus with that of the other sinuses. If no other reason can be assigned, the excess may fairly be attributed to the dental factor. Similarly, might not a comparison be made as to frequency of disease in those teeth in relation with antrum and the other teeth, and, if found to be greater, infer that the excess is to be explained by downward extension of the antral infection.

Closely connected with the question of the dental origin of antrum disease is the question of the dental route for its treatment.

If a suppurative antrum has originated as a result of an abscessed tooth, it is thought that the logical thing to do is, after removing the tooth, to treat the antrum through the route by which the disease entered.

Indeed, in former times, even a healthy tooth was sometimes removed. It was argued that the alveolar route was the one to be preferred because the most favorably placed from the standpoint of gravity drainage.

As a matter of fact, there are for operations upon the antrum three ways of approach: (1) through the alveolar socket; (2) through the facial wall of the maxilla; (3) through the wall separating it from the nasal cavity.

It must be understood that the extent of the operative procedure depends upon the nature of the case.

In simple recent cases, mere puncture of the wall is sufficient; in chronic cases, one makes a wide resection of the wall which may be retained for drainage and future treatment, or immediately closed after curettement of the sinus interior.

Two arguments are especially put forward by those who advocate the alveolar route as proper for treatment of suppurative disease even in the chronic form: (1) It is that it is the sensible thing because it follows the same route through which the infection travelled to enter the antrum; (2) it is preferable to others because it provides the best gravity drainage.

In regard to the first, it might be remarked that when the fire department is called out on account of a house in flames as a result of sparks from a neighboring building, they do not think it is necessary to enter the house through the same opening as that made by the fire. They enter where it is most convenient to reach the center of the conflagration.

If on extraction of the tooth, an intervening layer of healthy bone remains, do not pierce; but if the opening made is at once all the way through, and pus exudes, no objection should be raised to utilizing it temporarily for irrigating the antral cavity. A simple uncomplicated suppuration may thus promptly clear up. If, however, a purulent discharge persists, it is an indication that some bad pathology is present, such as granulations or polypoid degeneration, and other methods of treatment must be adopted.

As to the gravity argument, the premises are insecure. In eight of the twenty-four hours of the day, the patient is probably reclining; and during most of the day, if the alveolar opening is large enough to permit a drainage into the mouth, we have to prevent this by the use of some sort of a dental fixture.

At any rate gravity is not the chief means by which drainage of sinus is effected, but rather ciliary movement which often operates in direct opposition to gravity. The nasal mucous membranes, as you know, are provided with cilia, which drive the secretion toward the ostia, which in the case of the antrum is situated near the roof of the cavity.

Good surgery demands that an alveolar opening should be closed as soon as possible. Above all things, do not try to maintain patency by any sort of an obturator, as was formerly the custom. If the opening persists and is of a size to allow the purulent secretions to gain an entry to the mouth, a saddle plate can be made, which will obviate the objectionable condition, without interfering with the natural process of healing.

In 1743, a French physician, Lamarier, introduced the practice of puncturing the antrum through the facial wall. It was, however, long ago discarded and forgotten until, strange to say, it was recently revived by a member of the dental profession in a neighboring city, and put forward with much ballyhoo as something new and original. It is a thoroughly unscientific procedure and ought not to be practiced under any condition.

Sometimes the mistake is made of puncturing by way of the canine fossa into a really healthy sinus. This is very unfortunate, for the normal sinus is sterile, and the oral cavity contains always a collection of pathogenic organisms. The artificial communication allows the influx into the sinus of a horde of unaccustomed organisms, which it is unable to withstand, and infection is the sure consequence.

The naso-antral is the only wall which should ever be used for puncture purposes, and for continuous drainage. In the first place, it is the way which nature has indicated by having chosen it as her own way of draining the sinuses.

It is rational in that it obviates the very objectionable side effects of communication between the sinus and the mouth, viz., that foreign bacteria enter and infect the sinus and that pus from the sinus mixes with and infects the mouth secretion and the food.

The naso-antral wall can be used for three procedures:

1. Washing through the natural opening.

2. Puncture and irrigation through the inferior meatus.

3. Large opening through inferior meatus, with or without resection of portion of inferior turbinal.

In some cases the natural opening may be entered with middle turbinal *in situ*. It is, however, greatly facilitated by the resection of the anterior part of the middle turbinal. The cause of failure is often to be attributed to the use of an improperly curved sound on canula. The maxillary ostium does not open exactly on a plane with the antrum, but in a direction from within downward and forward. Therefore, the terminal end of the canula should be shaped somewhat like a shepherd crook, which can be, as it were, hooked into the ostium.

For puncture of the bony nasal wall, many types of trocars have been used, mostly modifications of the original Myles or Coakleys.

We have found that this little operation can often be more conveniently done by using an instrument in which the handle is jointed with the trocar part, and can, if need be, set at a considerable angle backward. This enables the operator to keep the hand out of the way of the beam of light that is being reflected into the nose. There is an advantage, moreover, in having a separable needle, in that where the point is dull or worn away, one does not need to get an entirely new instrument.

There has recently been a widespread revival of the method of treating a suppuration antrum by large naso-antral opening, now usually spoken of as the window resection. We were roundly abused for advocating this procedure, nearly twenty-five years ago. We did not then, however, and do not now claim that it is in itself an all sufficient procedure, although some rhinologists today seem to so consider it.

The fact is, many cases turn up in our consultation room and in the clinics in whom the operation has been done without the promised and hoped for success.

If we introduce the canula and wash out, we can nearly always bring away a considerable amount of unhealthy secretion.

The explanation is simple, and lies in the fact that sinus drainage is effected not by gravity, but by the activity of the epithelial cilia.

The lashing movement of this wonderful mechanism is always toward the ostia, no matter where situated, and this in spite of a large artificial opening situated much lower down. The cilia wave as though it did not exist and direct the stream of foreign material on past it to the opening provided by nature.

The value of the window resection consists in the fact that it provides excellent means for easily cleansing the antral cavity and a way for subsequent treatment.

Personally, we are employing with excellent results a nascent iodine vapor, obtained by means of electric heat. We have found that iodine may be used in relatively high concentration if combined in powder form with menthol, camphor, boric acid, cubeb and thymol. Many apparently operable cases cleared up under this treatment.

Of course, if actual necrosis of the bony wall of the cavity is at fault, more radical measures must be adopted.

This may be suspected when suppuration persists in spite of the elimination of all dental pathology and a reasonable duration of conservative treatment.

Several methods of radical operation have been used, but the profession has settled upon the Caldwell-Luc as the ideal procedure.

A wide resection is made in the facial wall, and through this the interior of the cavity can be seen and thoroughly curetted.

Then, after providing for an adequate drainage by way of the nose, the external opening is completely closed.

It is understood, however, that before undertaking this or any other major procedure, a thorough investigation should be made of the dental aspects of the case; for, if dental lesion is present, its immediate elimination is imperative, irrespective of the question of cause and effect.

Border trouble between states can usually be settled by amicable arbitration.

When the dentist, in the course of his work, discovers the presence of disease overlying the boundary of his own special province, involving what is known as the maxillary antrum, it behooves him forthwith to notify a rhinologist of that fact, at the same time advising him as to his own idea of the possible relationship with trouble in the teeth.

The rhinologist, for his part, in any case in which he finds maxillary sinusitis complicated by dental pathology, should not hesitate to call into consultation a competent dentist and leave for him the determination of the nature of the trouble and its cure.

The key to the situation in all such cases is a proper recognition of the limitation of one's own specialty, and intelligent cooperation from the neighboring specialty concerned.

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## FIND YOUR DIABETICS.*

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In 1930 diabetes mellitus stood tenth from the top in mortality in the United States with nineteen per 100,000. This was more than the combined death rate for malaria, measles, scarlet fever, whooping cough, and diphtheria; practically the same as the 19.5 for influenza, and the 19.6 for diarrheas in infants; more than the 12.8 puerperal mortality; over five times the combined total for alcoholism and rheumatism, and more than that of appendicitis, which was 11.6 in 1912, and, despite all the educational propaganda and clearer understanding of the diagnosis and treatment, has risen one-third to a total mortality in 1930 of 15.3. In 1912 diabetes stood at fifteen, and in 1922, with the beginning of the benefits of insulin therapy, it was 18.3. It is entirely probable that the small increase of .7 per 100,000 during the insulin era is accounted for by better diagnoses.

For years it was believed that there was in this country one diabetic to every one hundred in the population. Recent trend estimates one person in every fifty has, or will have, diabetes. It should be a conservative estimate, I think, that the average clientele of the doctors of this society will exceed 1,000; therefore, each of you should have under your care from ten to twenty diabetics. Have you? If not, there is a reason. That reason is the text of my message today.

Too many of us, I fear, have the old picture of diabetes in our minds. Some of us wait for symptoms to point the way to a diagnosis. So treacherous is this plan that Joslin had his classic work on Diabetes into the fourth edition before he listed the symptoms in detail. Many have no symptoms. Indeed, somewhere between 10 and 20 per cent are found among those considering themselves healthy when applying for life insurance. We always think, of course, of the three polys-, -uria, -dipsia, -phagia, as they head the list of symptoms, then sudden loss of strength, of weight, the skin symptoms,—pruritis, gangrene, carbuncles,—and pain in the extremities. You may find one, several, or none of these. Even nycturia does not usually occur until urine is 4 per cent sugar.

Last fall a business executive, whom I treated twenty years ago for gonorrheal fever, and with mercury and arsphenamines for most of 1932 for syphilis, came to me with a definite subcutaneous enlargement, intense pain, and all the classical symptoms of a carbuncle on the back of his neck. I had watched his kidneys and made several urinalyses while he was on specific treatment, and there had been no trouble whatever, but soon after getting a negative Kahn, he thought he was well and lapsed

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his treatment. I know it is unusual to find syphilis and diabetes associated, but a routine urinalysis on this first visit for the carbuncle showed 2½ per cent sugar. With that and the carbuncle, this was the one time I told a patient on the first visit that he had diabetes, that there was only one thing to do for him, and that was to treat his diabetes. I have never seen another diabetic develop faith in the treatment so fast. When, after a few days, the pain in his neck was gone, and within ten days the swelling, he was convinced that he had diabetes, and on dietetic treatment and exercise, he watched his urine reactions and is now sugar free. He had lost fifteen pounds, considerable strength, was getting nervous, had some itching of the skin, and the most voracious appetite and fondness for sweets, never failing to eat desserts, often asking for an extra serving, and eating candy between meals and ice cream daily. I am still wondering, had I been as persistent in getting blood sugar tests as I was the Kahns, as John, of the Cleveland Clinic, says we should be,—when this case would have been found.

In these days of fads, admiration of the slender figure, and so many methods of reducing, running all the way from special diets to the administration of thyroid extract, since we have learned from sad experience how hazardous is the old-time slip-shod injunction to a diabetic to restrict carbohydrates, eliminate all sweets, and eat freely of proteins and fats, thus transforming many mild into severe cases, how careful we should be to preach and to practice a balanced diet!

Last fall routine examination of a twenty-year-old school girl, preparatory to leaving for college, showed urine test lemon yellow with Benedict's. Subsequent tests for next few days showed no negatives, and various colors from green to a brick red. Sugar tolerance tests through the winter have shown lowest .11, and highest .17, with fasting urine often negative, but through the day .5 to 2 per cent. For three years this young lady has been an enthusiastic "reducer." Three years ago she told her mother, with enthusiasm, of a schoolmate, who went ten days on bread and water, and then of how beautiful the girl was and of the party given by her admirers. When I was told the articles in college boarding hall fare, eliminated because "that makes you fat," I could not see how the child lived through it. I think that girl still admires the long lean Cassius figure Shakespeare wrote about, though now she is the center of a debate with about evenly divided medical opinion as to whether her condition is renal glycosuria, or potential or even true diabetes, but it seems to be the concensus of opinion that, whatever she has, it came as a result of this enforced starvation. She is 10 per cent underweight, anemic, easily tired, not physically efficient, but, true to diabetic rule, a leader in school, almost all of her grades being A-s, as indeed they have been throughout her school career. Fortunately, we have few of these diagnostic difficulties.

Few serious diseases are diagnosed with the ease of diabetes. Tuberculosis is more difficult. Sugar in the urine, until proven otherwise, should mean diabetes; a fasting blood sugar above .14, and after eating, or test meal, or dextrose, above .17, especially if it does not return to normal within two, or at most within three, hours is corroborative. Dr. Roger H. Dennet, who was honor guest speaker at our last State meeting in Norfolk, says, "In my opinion there are not a few children who die in diabetic coma in whom the diagnosis has never been made."

Some colleagues of mine lost a fine young lady in third day of coma. She was just through school, and her parents—educated, intelligent and cultured—thought recent loss of weight and strength in the girl most likely meant tuberculosis, so they had her examined for that, but no urinalysis or diagnosis of diabetes was made until the final coma was claiming its victim.

Last winter a routine visit to my office by a girl of twenty-seven—who had been operated on at University Hospital three years ago when many gall-stones and the gall-bladder were removed, followed by prompt and complete recovery—with symptoms indicating digestive disturbance, led me to a tentative diagnosis of adhesions and some inflammation in the old operative area. However, her urine, which during the cholecystitis often showed from green to lemon yellow color with Benedict's, was now brick red. I outlined a diet for her, but she arranged a real feast that afternoon before beginning it, and ate heavily of meat, honey, cake, butter, and a little bread. That night coma developed. Massive does of insulin, subcutaneous and rectal saline, careful nursing, and dieting pulled her through, but

after a month she lapsed treatment and was on verge of coma again, after which she got down to her treatment in earnest and now seems in perfect health. Now I know that I regarded too lightly the finding of sugar when she had the cholecystitis. I should at least have followed that up through the years. My failure to do so almost caused a fatality.

Infectious diseases upset carbohydrate metabolism, and there is suggested frequent injury to the islets of Langerhans, with diminished insulin production and lowered carbohydrate dextrose tolerance, which may last for weeks or even months. It is imperative, therefore, that we make a complete urinalysis at the end of convalescence from any serious disease, injury, or operation. There is now seeping into the literature suspicion that the extensive use of dextrose may sometimes light up a quiescent condition. Convalescence usually means forced feeding, lack of or no exercise, and, while urinalyses during this period will more frequently yield positive findings regarding disease of the kidneys, there will be enough sugar reactions discovered to justify the trouble.

In pregnancy, we think it almost the rule to find sugar in the urine, and we usually regard it very lightly, but it will do no harm to remember and check up at intervals afterward. Pregnancy, parturition, and nursing are strains on the metabolic processes. Gallstones, cholecystitis, and practically all infections of the liver afford foci of infection, and a glance at the anatomical relations of these parts to the pancreas indicates the hazard.

Ninety per cent of diabetic children are over height, 80 per cent of adults over weight; there is a preponderance of females, and for them the peaks are about puberty and the menopause; whites predominate over colored, Jews lead the world, and the Irish follow. Sedentary occupations, mental workers, good livers who are fond of eating, especially if they have a "sweet tooth," heredity, the third and fourth decades of life furnishing two to three times as many cases as the first, and the fifth and sixth decades nearly double the third and fourth, the heaviest incidence in life occurring in the sixth decade, and the seventh and eighth decades dropping back to approximately the second and the first,—all these things are suggestive, excite our interest, and should cause us to investigate. But the avenue ahead of all through which we will find these cases is:

*Urinalysis.* Urinary examinations are comparatively recent. An old record in the Massachusetts General Hospital made in 1866 by a house pupil, afterward a Harvard professor, says "urine tasted sweet." When sugar eliminated through the kidneys is from 10 to 20 grams daily, the quantity of urine is usually normal, 1,000 to 1,500 c.c. When the excretion is considerable the quantity of urine is usually markedly increased. When of normal quantity, we rarely expect the urine to contain over 3 per cent sugar, but 9 per cent sugar with 2,000 c.c. of urine is found. Urine rarely tests over 9 per cent and the quantity rarely exceeds 10 to 15 liters.

How insidious is the development of diabetes! Why not make urinalyses of all our patients? True, we will find other abnormalities more frequently than diabetes, and those findings will repay us for all our pains. Better than the twenty-four-hour mixed specimen is the separate examination of each specimen voided during the day. That gives us an opportunity to detect fixation of specific gravity, than which we have no more valuable kidney test today. But don't ever think there is no sugar unless the specific gravity is high. Numerous cases show a low specific gravity or a normal. Casts disintegrate in a twenty-four-hour specimen, whereas in fresh single specimen they may show up clear and abundant. If I am to have only one specimen, I ask patient to void at breakfast and again two hours later and send me the latter. Sugar tolerance increases through the day; hence, the advantage of having this after breakfast. I like to know what is eaten for breakfast, and, if the food is abundant, or a test meal, or dextrose, in the presence of diabetes there should be a positive reaction with Benedict's, which I consider head and shoulders above any of the other reagents for the detection of sugar.

Recently, while waiting around a medical college laboratory, I watched a number of internes making Benedict's test over the Bunsen burners. Their average time was one and one-fourth minutes; and maximum time was two minutes. Of course, this is inadequate. Three minutes actual boiling may suffice, but why not be sure and use the whole five minutes. I have a rack to put my tubes in to boil and find it of great advantage. It is sur-

prising how readily patients can be taught to make this test by immersing the tube in boiling water for five minutes. What with manuals, test solutions and outfits, and eternal vigilance, the cooperation of these patients can be secured and kept, and only 10 to 20 per cent of them will be compelled to take insulin.

Life insurance examinations that are free to policyholders, and health examinations, now becoming more popular, locate a good many cases. We are taking great pride in steering our clientele away from small-pox, diphtheria, typhoid fever, and to a less extent from tuberculosis, whooping cough, scarlet fever and measles. The only one of these that approaches diabetes in mortality is tuberculosis. Why not find our cases before they are diabetes, just as the mechanic finds the trouble with our cars before new and costly parts must be purchased for replacement, and tell the obese, the big eaters, those consuming too many sweets, the diet faddists, especially among the young with the whole dietetic regimen out of balance, that they are candidates for diabetes, and gently lead and train them until, with regularity of meals, balanced fare, and exercise, we shall not only enable them to avoid diabetes but many other pitfalls in the degenerative diseases of the cardio-renal and digestive systems?

In conclusion, there is no secret, no short cut, no mystery about finding your diabetics. Suspicion, vigilance, eagerness to get a picture as complete as possible of what is the matter, never tiring of the tedium of urinalyses is the plan advocated by Dr. Henry A. Christian. It will show us far more trouble elsewhere than in the pancreas, but we will find enough there to repay us for all the trouble, and how often will we be surprised to find diabetes when we least suspect it! Think how many more balls Babe Ruth misses than he hits, but, when he makes them, such hits!

I never make a diagnosis from a single test; the container might be contaminated, and many things could happen to throw us off, but follow up, making repeated tests, noting effect of diet on amount of sugar, an occasional blood sugar tolerance test,—these will point the way with almost unerring accuracy. Renal glycosuria, hypertension, nephritis, hyper- and hypothyroidism, diseases of the liver, pituitary, adrenals, apoplexy, pneumonia, typhoid, tuberculosis with fever, some cancers, post-anesthetic and post-operative conditions, pain, fever, psychic trauma, phlorizin, carbon monoxide poisoning, certain narcotics, salicylates, etc.,—may each show sugar in the urine, usually scant and transitory, but a little attention to detail and these offer no real obstacle to the finding of diabetes.

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## CARCINOMA OF THE LARYNX—REPORT OF CASES.*

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Intrinsic carcinoma of the larynx is curable in the majority of instances. Whenever a statement of this kind can be made in regard to cancer anywhere, it should create a deep sense of satisfaction in us, and at the same time an increased zeal in discovering them while they are still intrinsic.

Approximately 95 per cent of laryngeal cancers are squamous cell epitheliomas; hence, they grow slowly, metastasize late, and produce the early symptom of hoarseness, which should direct our attention to it early enough for a diagnosis at this stage.

In spite of these ideal factors the large majority are not seen until the growth has become extrinsic, and the hope of cure greatly diminished, and I am sorry to say that the reason is largely due to the physician himself, who will not conduct a simple mirror examination of the larynx, nor see that the patient is referred to one who will do this for him. Any patient with a persistent hoarseness should have a careful mirror examination of the larynx to rule out malignant disease.

We have seen seventeen cases of malignant disease of the larynx during the past eight years, fourteen men and three women; and in only two of these was the tumor definitely intrinsic, in spite of the fact that symptoms had been present for from one to twelve months, with an average duration of four months.

The annual deaths from cancer in the United States and Canada are now estimated at approximately 150,000, and since about 4 per cent of these occurred from cancer of the larynx, we can estimate about 6,000 deaths last year from this type alone, with approximately another 18,000 now suffering with the disease. These statistics, coupled with the first statement that the majority of these lives can be saved by early diagnosis and treatment, places

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Fig. 1.—Nine days after total laryngectomy. Note feeding tube through nose.

a big responsibility on the physician today. Cancer now ranks second as a cause of death, and since people are living longer, more of them reach the so-called cancer age, and this is why cancer has become the most important surgical problem today and is becoming increasingly important as the years go by.

In keeping with this apparent increase in cancer, there has taken place a very real advance in its treatment. Through the efforts of MacKenty the technic of laryngectomy has been perfected, and through many others the technic of laryngo-fissure.

In recent years the discovery and use of avertin as a basal anesthetic when combined with local, has practically solved the anesthesia problem, which has always been a very real one in laryngeal surgery. Likewise, the development of electrothermic methods, using the combined cutting and coagulating current, has been of inestimable value in operating in certain cases. The pathologist has contributed by the development of the grading of tumors after the method of Broders, so that we can select our method of treatment accordingly. In Grade I we feel that surgery offers the best chance of cure, for these are the squamous cell type which respond poorly to radiation, while at the other extreme are the Grade IV, the anaplastic or embryonal type which are very malignant, metastasize early and extensively, yet are the most radio-sensitive of all and the least susceptible to surgery. In between these two extremes are Grades II and III, and the method should be selected which best fits the particular case.

Radium, in the form of emanation seeds which can be buried and left in the tissue, will produce cancer cell death during their decay for a zone of one-half cm., or the needles of the salt itself may be used, which have a more decided and continuous gamma radiation but, of course, must be recovered. Both of these methods of using radium are important adjuncts in certain cases.

Perhaps the most important development in the radiation treatment of malignant disease is the fractional dose method of Coutard, using the roentgen ray. No matter what type of operation is done, the grade of tumor, or whether radium has been used or not, it should be employed—and while it is yet too early to evaluate the method fully, it certainly seems yet to be one of the most important steps in the treatment of the most malignant tumors particularly.

Fig. 2.—Same patient twenty-one days after operation.

Armed with all of these modern methods, we are now treating cases of extrinsic cancer,

which only a few years ago were condemned at first sight, and I believe that we are safe in offering new hope to these patients, yet we must not relax for one instant in our determination to make earlier diagnoses, for after all, that is where our best results will always be obtained.

Fig. 3.—Gross specimen removed. Note large ulcerative lesion below vocal cords.

One of the most important things in diagnosis is to carefully examine with the direct laryngoscope any suspicious area noted on mirror laryngoscopy, and to take carefully a specimen of tissue for microscopic examination. It has been conclusively shown that biopsy does no harm, and is all important in diagnosis.

The presence of a positive Wassermann or pulmonary tuberculosis should not deter you, for any two or three of these conditions may be present, and I can recall one case who had an advanced extrinsic carcinoma of the larynx, along with a strongly positive Wassermann and advanced bilateral pulmonary tuberculosis with cavitation. This patient died of a pulmonary hemorrhage one month later.

Successful treatment depends on careful selection of the method of treatment, and careful pre-operative study, particularly for the presence of metastasis to the lung, esophagus or other important structures, for it would be useless to put a patient through a major operative procedure if widespread metastasis has occurred. This pre-operative study must also include every system and structure, and all possible defects corrected before operation. If this is done our operative mortality should be practically nil.

Each particular case is a law unto itself, and no rules can be laid down as to the best method of treatment. Very early cases can be cured by local excision, as has been proved by the late Dr. Lynch, of New Orleans. Yet in the hands of most men, no doubt, laryngo-fissure is better, and has the advantage of also leaving a good voice. In more advanced cases laryngectomy should be done; in others still, an even more radical operation, including a dissection of the glands of the neck, while, last of all, in certain cases electro-surgery may be better in conjunction with radium and roentgen ray therapy after the method of Coutard, who recently reported nine five-year cures of very malignant hypopharyngeal tumors by roentgen ray therapy alone. Trotter, from a very extensive surgical experience, reports only seven after surgical removal.

Regardless of what type of operation is employed, all should have the benefit of roentgen ray therapy also.

Fig. 4.—Large extrinsic squamous cell carcinoma.

The most frequent objection raised to laryngectomy is loss of the voice, yet those who object do not seem to realize that the disease itself soon robs the patient of his voice, and, shortly afterwards, of his life. Fortunately this objection is largely overcome by the de-

velopment of the artificial larynx, the use of which is quickly learned, and which furnishes a very useful speaking voice.

In going over the records of our seventeen cases, only six were in any sense operable as viewed at the time, and five of these consented to operation. One was operated upon by laryngo-fissure, and although he left the hospital in good condition, we have been unable to trace him.

Three were operated upon by laryngectomy. The first was extrinsic, in that the growth had extended well down into the trachea, with a second tumor just above the bifurcation, which was either metastatic or another primary growth, for it was separated from the laryngeal growth by several centimeters of normal trachea. These tumors were both squamous cell, Grades III and IV. This patient died fifteen months later from the dissemination of the carcinoma.

The second case was entirely intrinsic, although symptoms had been present seven months. This also was squamous cell, Grade III. Unfortunately this patient had a bundle branch heart block with a very large heart,

Fig. 5.—Large extrinsic growth.

myocardial degeneration, and pulmonary edema. However, at his and his family's request, a total laryngectomy was done successfully, and his progress was uneventful until the eighth day, when a partial tracheal obstruction threw too much of a load on the heart, and death soon followed. I was particularly interested in this case, which showed how well the immediate operation was withstood in spite of the severe complications.

The third case was extrinsic, in that the tumor had spread up to the epiglottis. This was a squamous cell, but Grade II, so we did a total laryngectomy, followed by irradiation. He is now alive and well after seven months. It has been shown by New that in excising cancer the incision should be at least .75 cm. from the apparent edge of the tumor. I doubt that our margin was as great as this in this case, yet there has been no recurrence so far. Of course, being Grade II, we probably did not need quite such a margin.

Fig. 6.—Typical microscopic section of squamous celled carcinoma as found in the larynx.

The fifth case came in recently with a rather extensive extrinsic squamous cell cancer, Grade III, which occupied the right ary-epiglottic fold, extending from the arytenoid posteriorly, well up on the epiglottis anteriorly, laterally into the pyriform sinus and internally into the ventricle of the larynx. Symptoms had been present six months, yet there were very slight voice changes, because of its situation. This case was entirely inoperable, and a short time ago would not have been treated, but, following the work of Coutard, we removed the mass by electro-surgery and implanted four radon

seeds in its base for a total radium emanation of 6.1 millicuries. He is still in the hospital undergoing roentgen ray therapy by the fractional dose method. Of course tracheotomy was done before undertaking treatment.

We are following the progress of this case with a great deal of interest, since it is the first opportunity we have had to undertake this method of treatment.

### Conclusions

1. Intrinsic cancer of the larynx is curable in the majority of instances.
2. Any patient with a persistent hoarseness should have a careful mirror examination of the larynx.
3. With newer methods of diagnosis and treatment new hope can be held out to those who are so unfortunate as to develop cancer.

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## PELVIC INFLAMMATION IN WOMEN.*

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Pelvic inflammation and pelvic inflammatory disease are synonymous terms applied to inflammation of the pelvic organs. The uterus, Fallopian tubes, ovaries, pelvic peritoneum and pelvic connective tissue may be involved singly or in combination. Most writers do not include the uterus in discussions of pelvic inflammation, but it would seem that the uterus (at least the body) should be included in these discussions, as it is so frequently involved, and because the inflammation outside of the uterus in a great majority of cases has spread from it—either from the body of the uterus or from the cervix.

### Etiology

The most frequent infecting organism is the gonococcus or Neisser bacillus. The other organisms most commonly found are the streptococcus, staphylococcus, colon bacillus and the tubercle bacillus. Occasionally the spirocheta pallida, pneumococcus, typhoid bacillus or the actinomyces may be the infecting organism. Pelvic inflammation is frequently a mixed infection. The gonococcus is thought to be present in considerably more than half of all cases. Polak estimated that more than 75 per cent of his cases were of gonorrheal origin. Because pus when collected from the tubes and pelvic abscesses is frequently sterile, it is difficult or impossible to give exact percentages. Most reports on pelvic inflammation state that from 3 to 10 per cent are due to the tubercle bacillus; while one report (Mackenzie) states the streptococcus was found in 30 per cent of the cases, but that certainly is higher than the average reported.

### Incidence

Pelvic inflammation and its sequelae are the most frequent cause of disability in women. Pelvic inflammation occurs most frequently in colored women, and, of course, the incidence would be expected to be higher where there is a greater proportion of the colored race. Noyes in his report states that 18 per cent of all cases admitted to their Gynecological Department were for pelvic inflammation. Of the cases he investigated, which had had gonorrheal infection of the urethra and cervix, 39 per cent developed pelvic inflammation. The percentage of gynecological admissions with pelvic inflammation given by Noyes is according to my experience a little low; while the percentage of pelvic inflammation following gonorrheal infection of the urethra and cervix as given by him would appear to me to represent a fair average.

### Classification

Pelvic inflammation may be either acute, subacute or chronic. From a clinical standpoint Anspach divides it into (a) pelvic inflammation occurring in the course of gonorrhea; (b) pelvic inflammation occurring after abortion or labor; (c) pelvic inflammation occurring after instrumentation or operation on the utero-vaginal tract; (d) pelvic inflammation occurring in the course of tuberculosis and (e) pelvic inflammation occurring in the course of general infections. Pelvic inflammations occurring after operations on the utero-vaginal tract and in the course of general infections make up only a small percentage of all cases. The non-pregnant and non-puerperal uterus is seldom infected during instrumentation; the rare cases occurring are usually thought to be due to a flaring-up of a latent infection.

### Pathology

*Cervicitis and Endocervicitis.* There is usually a chronic infection of the cervix—with enlargement and swelling, and with some increase of the connective tissue. There is as a rule a profuse muco-purulent discharge coming from the cervix, and there is a proliferation of the epithelium lining the cervical canal, which replaces part of the squamous epithelium. Erosions and cyst formations are frequently present.

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*Endometritis.* Acute gonorrheal endometritis is a self-limiting disease. The mucosa is swollen, hyperemic and there may be granulations. When the gonorrheal infection reaches the endometrium, it usually extends to the tubes. Chronic gonorrheal endometritis as a clinical entity does not exist, but chronic cases develop by being re-infected from the diseased tubes. In cases of endometritis, the uterus is swollen and enlarged, partly due to congestion.

There are two principal forms of puerperal endometritis (Bumm—quoted by Polak): First, the putrid form, in which the bacteria are limited to the surface and to the necrotic material lying thereon—the bacteria being of low virulence; second, the septic form, in which the streptococci and pyogenic bacteria invade the blood vessels and lymphatics, passing through the protective wall, involving the uterus and frequently the parametrium. The septic form is a serious and more severe infection.

*Salpingitis.* There may be a mild salpingitis, with practically no free pus or exudate, and the ends of the tubes may or may not be open. Or there may be a more marked salpingitis with pus and exudates binding the uterus, tubes, ovaries and intestines together; while there may be a purulent salpingitis with considerable pus. The collections of pus may be in one or both tubes, or the ovary and tube may be involved in one abscess. Rupture may occcur in the surrounding organs, particularly the intestines; the rectum is most often involved. Pyosalpinx, hydrosalpinx, tubo-ovarian abscess and cysts involving the tube and ovary occur fairly often. The gonorrheal type is the most frequent form of salpingitis, and the infection begins within the tube; whereas, in salpingitis following abortion or labor, the infection begins on the outside of the tube. Tuberculosis is estimated to be present in from 3 to 10 per cent of the cases. Curtis states that gonorrheal invasion of the tubes and adjacent tissues tends to produce self-limitation, and that the chronic cases are typically re-infections.

*Oophoritis.* Inflammation of the ovary may be mild or it may extend to abscess formation. Adhesions with the formation of cysts are fairly common. Abscess of the ovary is a fairly common complication of pelvic inflammation following abortion or labor; it is also of rather more frequent occurrence in the gonorrheal cases, especially if there is much involvement of the tube. "Ovarian involvement occurs in less than one-third of the cases of genital tuberculosis. Some authors report the percentage to be as low as 12.6" (Anspach). Infection of the ovary may be by direct extension from the tubes and peritoneum, or through the lymphatics, and rarely by the hematogenous route.

*Peritonitis.* There may a diffuse peritonitis or a diffuse suppuration in the pelvis, or a combination of the two conditions, with all of the pelvic organs matted together in a purulent inflammatory mass.

*Cellulitis.* The cellulitis is usually due to the streptococcus, staphylococuss or colon bacillus. It is seldom due to the gonococcus. In the mild cases there may be very little pus, but in the more severe cases, abscesses are of frequent occurrence.

*Thrombosis.* Thrombophlebitis of the veins at the placental site and in the broad ligaments frequently occurs, and at times extends to the iliac and femoral vessels. There may be a septic thrombosic, which is often fatal; it is seen mainly in puerperal sepsis.

These pelvic infections which are due to the gonococcus have a tendency to be walled off in the pelvis, while infections due to the streptococcus (the streptococcus plays the most important part in the inflammations following abortion and labor) are more serious and are more likely to spread to the abdominal cavity. Pelvic inflammations due to gonorrhea are more likely to leave permanent defects in the pelvic organs than are those which follow abortion or labor. Pelvic adhesions are very common in pelvic inflammations, especially those due to gonorrhea.

### Symptoms

*Acute Pelvic Inflammation.* There are pains in the lower abdomen, which may be confined to one or both sides. The pains are constant and at times are cramp-like; they extend to the upper abdomen in the more severe cases and are frequently referred to the back, and in some cases to the hips and thighs. The pains are increased by motion, especially when standing or attempting to walk. There is tenderness and rigidity of one or both iliac regions, or the whole lower abdomen may be involved. Usually there is some tenderness and rigidity on both sides, though one of the iliac regions is as a rule more involved than the other.

In the more severe cases tenderness and rigidity extend to the upper abdomen, and at times reach the costal margins. There will be fever, which is highest in the cases following abortion or labor. Very often there is some distention of the lower abdomen, the amount of distention depending upon the amount of peritoneal involvement. The pulse rate is increased and vomiting may occur. Hematuria may be present, especially if the inflammation has extended to the bladder; frequent and painful urination is common, and there is usually constipation with painful defecation. There is practically always some leukorrhea, though there is likely to be some decrease of the discharge during the first few days of the disease. The abdominal and general symptoms are usually more marked in the cases following abortion or labor; nevertheless, the symptoms in the gonorrheal cases are very pronounced at times. Chills may occur, particularly in the puerperal cases. The gonorrheal cases usually begin immediately after the menses, or the menstruation may be abruptly stopped by the attack. On bimanual examination, there will be found tenderness of the uterus (pressure on the cervix causes pain) and of the adnexa on one or both sides, the tenderness very often being so marked that deep palpation is unsatisfactory or impossible. A mass may or may not be present, but it is usually present in the more severe cases, especially after the first few days. These masses are tender as a rule, and they may be just large enough to detect on bimanual examination, or they may be extensive enough to fill one or both sides of the pelvis and the cul de sac. When there is much involvement and many adhesions there will be complete fixation of the uterus, and the fundus will be difficult or impossible to palpate, but in the milder cases fixation will not be present to such a great extent, though there is practically always some fixation. In the puerperal cases the discharge often remains bloody, there is a foul odor, the after-pains may continue and there may be toxemia. In either type there will be leucocytosis, with an increase of polymorphonuclears. Smears may show the offending organism, and blood cultures may be positive in the septic cases.

The symptoms of *chronic pelvic inflammation* are pains in the pelvis, which are increased by standing or walking and also during menstruation. There is backache, leukorrhea, tenderness of the lower abdomen, menstrual disturbances—usually a dysmenorrhea, menorrhagia or metrorrhagia, or, if the ovaries have become markedly involved, there may be scanty or delayed menstruation or even amenorrhea. Fluhmann states that 35 to 50 per cent of the cases with salpingitis have abnormal uterine bleeding. All symptoms are increased during menstruation, and exacerbations are frequent following it. During the periods of exacerbations there will be fever and leucocytosis. Patients with chronic pelvic inflammation are usually neurotic and pale, and digestive disturbances are fairly common. Occasionally there may be a sudden gush of a watery or purulent discharge from the vagina. On examination there will be found tenderness in one or both iliac regions, leukorrhea, enlargement and infection of the cervix, and tenderness of the uterus with probably some enlargement. There is usually some fixation of the uterus, and it has a tendency to be drawn backwards or to the side. There is tenderness in the region of one or both tubes or behind the uterus, and there is usually a mass present. The mass may be large or small, but it is not as large as a rule in the chronic as in the acute stage.

### Diagnosis

The *history is especially important in the diagnosis* of pelvic inflammation, regardless of whether it be an acute or chronic case. Careful inquiry should be made about previous gonorrheal infection, or recent abortion, labor or operations upon the utero-vaginal tract. Acute pelvic inflammation may give rise to symptoms which may be confused with most any acute abdominal condition, but acute appendicitis is probably the condition which it is most often necessary to differentiate. Intestinal obstruction, extra-uterine pregnancy, ovarion tumors with twisted pedicles, diverticulitis, perforated intestinal ulcers, cystitis and acute infections of the urinary tract—with or without stones,—occasionally gall-bladder disease, acute abdominal allergy, infected and twisted pedunculated fibroids, etc., will have to be differentiated.

At times it is difficult to say whether the pelvic inflammation is due to gonorrhea or one following abortion, or to a combination of the two conditions. For illustration we report the following case: The patient is 20 years of age, single, and stated she had had some pain in

her right lower abdomen during menstruation since she first began to menstruate. Menstruation is usually delayed, and she has had some leukorrhea. Her last menstruation began twenty-five days previously. Two days before the examination she developed pain in the lower abdomen, particularly on the right side. She claimed she was not aware of passing any blood since her last menstruation, but examination revealed a slightly bloody vaginal discharge, with a few small clots. The cervix was soft and slightly dilated. The uterus was enlarged, tender, fixed and could not palpate the fundus. There was a rather large and very tender mass in the right adnexa; left adnexa was negative except for moderate tenderness. Smear was negative for the gonococcus. W. B. C. 20,000; polymorphonuclears 87 per cent. It was evident at the original examination that this was a case of acute pelvic inflammation with pyosalpix on the right side, which was probably of the recurrent type, and which in all probability was of gonorrheal origin, but whether there was a complicating threatened or incomplete abortion could not be determined at that time. The subsequent course of this case and re-examinations did not reveal any definite evidence of abortion or pregnancy.

The various laboratory tests are often helpful in the diagnosis, as well as in the progress of the case. The tests most commonly employed are: complete blood counts including the Schilling differential, smears, sedimentation time of the blood, blood cultures, urinalysis of a catheterized specimen, and one of the various tests for pregnancy, of which the Friedman is probably the best. The Friedman test may be positive for a few days after complete abortion, and if some of the placental tissue remains attached to the uterus it will remain positive for several days.

In chronic pelvic inflammation it will be necessary in the differential diagnosis to take into consideration: chronic appendicitis, abdominal adhesions—especially with partial intestinal obstruction,—myomata of the uterus, ovarian and broad ligament tumors, colitis, ureteral stricture, chronic cystitis and chronic infections of the urinary tract—with and without stones,—psoas abscess, sarcoma or tuberculosis of the iliac glands.

The diagnosis of chronic gonorrheal infections is not always easy. The gonococcus is very difficult to find in the smears, and there may be found a Gram negative extracellular diplococcus which is very puzzling to differentiate. It is true these diplococci are extracellular; they are somewhat smaller than the gonococcus and they are often found in trichomona vaginalis infection; nevertheless, it is almost impossible to say at times whether there is a gonorrheal infection present or not.

### Differential Diagnosis

In acute appendicitis the pain usually begins in the epigastrium, then becomes diffuse, and later localizes in the right lower quadrant—in the region of the appendix. The onset may be a little more rapid in appendicitis, and the patient as a rule appears to be sicker in the early cases. Tenderness and rigidity are nearly always confined to the right side and as a rule are higher up. In an occasional case acute appendicitis may begin with pain and tenderness on the left side. The greatest point of tenderness after appendicitis localizes is at McBurney's point, whereas, in right sided pelvic inflammation it is usually a little lower. Pressure over McBurney's point often causes pain in the epigastrium in appendicitis and there is more likely to be a history of digestive disturbances; whereas, tenderness of the uterus and leukorrhea are found in pelvic inflammation. Appendicitis and pelvic inflammation may occur at the same time, and this fact must constantly be kept in mind. Infection of the appendix following pelvic inflammation occurs fairly often; the infection begins as a periappendicitis. On the other hand, the adnexa may become infected following appendicitis.

In intestinal obstruction there is as a rule a more marked distention, visible peristalsis may occur, and there is an absence of pathological findings on vaginal examination. There may be a history of previous peritonitis, or there may be scars from previous abdominal operations. Pain comes on suddenly and is cramp-like as a rule. Enemas are ineffective, especially after the first one or two are given. An irreducible hernia may be found. Vomiting occurs and if the obstruction is not relieved it becomes fecal in character.

In acute intestinal perforation there is a more severe and diffuse abdominal pain, and there is more likely to be shock. There is a more pronounced rigidity, which is often board-like, and it is more marked as a rule

in the upper abdomen. Air between the liver and diaphragm, as shown by the X-ray, would demonstrate perforation, but failure to demonstrate air by X-ray examination would not absolutely rule out perforation.

In extra-uterine pregnancy there will usually be obtained a history of delayed menstruation and there may be slight bleeding. The uterus is slightly enlarged and if a tender mass can be made out on either side of it, the diagnosis will usually be correct. The Friedman test would establish a diagnosis of pregnancy. X-ray of the uterus after the intrauterine injection of lipiodol has been recommended to differentiate uterine from extra-uterine pregnancy in cases when the immediate diagnosis was imperative. With rupture there is acute pain in one of the iliac regions. and there will be shock with symptoms of internal hemorrhage.

In cases of ovarian tumor with twisted pedicle, there is obstruction of the circulation, with the production of severe pain (which is hard to relieve) in one of the iliac regions. A tumor can usually be made out unless it is very small. There is no fixation of the uterus unless there is a complicating pelvic infection.

Diverticulitis usually begins with pain in the left iliac region, being somewhat similar to appendicitis, except the pain is on the left side. If the symptoms are not too acute, the X-ray would establish the diagnosis. A mass may be found in the acute cases, especially if perforation occurs.

In acute cholecystitis, the pains and tenderness are usually confined to the right upper quadrant, and if stones are present a history of severe colic can usually be obtained. Vaginal examination will be negative.

In infections of the urinary tract, the examination of a catheterized specimen of urine will usually reveal pus, and sometimes blood and albumin. There is usually a history of frequency, with burning during urination. Cystoscopic and X-ray examinations will reveal the true condition.

In acute abdominal allergy a history of asthma, hay fever, urticaria or abdominal pains after eating certain foods can usually be obtained. There is no fever and the pain can be relieved by epinephrin (Graham's Surgical Diagnosis).

### Prophylaxis

Prophylaxis is most important in the prevention of pelvic inflammation. The eradication of gonorrheal disease in the urethra, Skene's and Bartholin's glands and the cervix would greatly decrease the percentage of pelvic inflammations. Strict asepsis practiced in the management of puerperal cases would do much to lessen the cases following abortion and labor. Infected cervices should be treated during the early months of pregnancy, but cauterizations of the cervical canal should not be done. Local treatment should not be instituted in the beginning of gonorrhea, as it is liable to spread the infection; neither is local treatment advisable in the early stage of acute pelvic inflammation. Patients with pelvic inflammation should be kept in bed until all evidence of activity has subsided.

### Treatment

In acute pelvic inflammation the patient should be put to bed and placed in Fowler's position. Intestinal distention and constipation should be relieved by enemas. Purgatives are contra-indicated, particularly in the early cases, as they increase peristalsis, and are therefore liable to cause a spreading of the peritonitis (Polak). An ice bag should be placed over the hypogastrium. After the diagnosis has been definitely established and the constipation relieved, give liquids freely (in the severe cases it may be advisable to also give saline and glucose subcutaneously and intravenously), and gradually increase the diet as the condition improves. If the pain is not relieved by the above measures, it will be necessary to give anodynes or opiates. Codein and aspirin will usually give relief, though at times morphia may be necessary, but it must not be given until the diagnosis has been made. After the more acute symptoms have subsided, hot vaginal douches should be begun. These hot douches should be as hot as the patient can comfortably bear, and they must be given under low pressure and prolonged. The Elliott method of applying heat to the vaginal tract is becoming more popular in these cases. and good results with it have been reported. It probably is the best method in use at the present time for applying heat to the vaginal tract. It is my understanding that some physicians are using this method in the very beginning of the acute cases, but it would certainly seem advisable to wait a few days until the severity

of the symptoms had subsided, particularly in the cases following abortion or labor, and also in the gonorrheal cases, before starting this treatment. When hot douches are begun, heat should be substituted for the ice bag to the lower abdomen. Non-specific protein therapy is advocated in pelvic inflammation, giving the best results in the acute and subacute cases. The results of non-specific protein therapy are disappointing at times; nevertheless, it should be given a trial in every case. Certainly it is of benefit in some cases. The form of non-specific protein therapy employed perhaps does not make any particular difference, but of course each attendant will prefer that form which has given him the best results, whether it be boiled skimmed milk or one of the commercial preparations on the market. Vaccines in the gonorrheal cases have been disappointing. Whitehouse advises injecting 10 c.c. of warm lipiodol through the posterior fornix during the acute stage; he also recommends smearing it over the pelvic organs during operation. It is absorbed very slowly and some was found in the urine after fourteen months.

Abdominal operation is ordinarily contraindicated in the acute cases, but in cases of rapidly spreading peritonitis immediate operation may seem imperative. When collections of pus have accumulated, drainage should be instituted, and if possible it should be by the vaginal route. When the collections of pus are so situated that they cannot be drained through the vagina, they can at times—especially the parametric exudates—be drained by the extraperitoneal route just above Poupart's ligament. Early abdominal operation in the more severe cases is advocated by a few; nevertheless, the great majority seem to agree that the best results are obtained by postponing operation for the sequelae of the infection, and that operation, except as stated above, should rarely be undertaken during the acute stage. The important reasons for avoiding abdominal operation in the acute stage are that these infections will clear up in a large percentage of the cases, and that operation may spread the peritonitis. Abdominal operation is an extremely dangerous procedure in acute cases following abortion or labor, particularly so when the streptococcus is the offending organism.

*Chronic Pelvic Inflammation.* Whether the treatment will be operative or non-operative in the chronic stage will depend largely upon the amount of involvement found at the time of the examination, but even in the chronic stage with proper treatment it is surprising at times how these infections will subside; therefore, operation should be delayed unless there are positive indications to proceed with it. During the stage of exacerbation of chronic pelvic inflammation, the treatment should be directed along the lines outlined above for the acute condition. When the condition has reached the chronic stage, measures should be taken to relieve pelvic congestion and to promote absorption of the products of inflammation. If there is any evidence of activity the patient should be confined to bed, and even if there is no activity she should be advised to take a certain amount of rest during the day, and cautioned to avoid fatigue. While a certain amount of exercise may be advisable, strenuous exercise should be prohibited. The bowels should be regulated and hot sitz-baths are beneficial. While non-specific protein therapy is not as efficacious in the chronic as in the acute stage, it is helpful at times and should always be given a trial. One important thing to remember is the fact that it is necessary to continue the injections over a longer period during the chronic stage. No less than twelve injections should be given, and it may be necessary to give eighteen or twenty injections before obtaining results. Hot douches and heat are used in the chronic stage, and the methods used in the acute stage are recommended. Medical diathermy has in the hands of a few given fair results, but it should not be used if there is any evidence of activity, and it is not always easy to say whether there is any activity or not. If bimanual examination does not cause a flare-up, if there is no leucocytosis, and the sedimentation time of the blood is normal, it would be safe to proceed with the diathermy treatments, but with the understanding if a flare-up should occur, the treatments must be discontinued. It is supposed to give better results in the cases following abortion and labor than it does in the Neisserian group, and the abdomino-sacral method of applying the electrodes is to be preferred (Scheffey and Schmidt). Scheffey and Schmidt think its beneficial effects are the results of increased circulation, rather than from the heat generated in the tissues, and it is supposed to be more effective in women experiencing their first attack than it is in the recurrent cases. Its use is contraindicated in the presence of

complicating conditions, as myoma or ovarian cysts, menstruation, or the presence of profuse bleeding of inflammatory origin (Scheffey and Schmidt). To me the results of diathermy have been disappointing.

If surgery becomes necessary, the operation or operations to be performed will, of course, depend upon the findings, but there seems to be no question about conservatism being the best policy. The indications for operation are: repeated attacks, persistent adnexal masses with tenderness and pain, marked menstrual disturbances and certain economic conditions (Priestly and Payne). When operating, adhesions should be freed; perhaps a plastic operation on the tube or ovary may be possible, and covering the raw areas with omental transplants has been recommended. If there is any particular amount of pus in the tubes they should be removed, but in doubtful cases, especially in young women, at least one tube should be saved. Sterility in these cases can occasionally be cured by plastic operations on the tubes. If possible the ovaries should be spared, but if covered with dense adhesions and cystic, their removal is advisable; whereas, if the adhesions are thin and the cystic changes slight, they should not be removed. If it is necessary to remove the tubes, the uterus should be suspended. If it is necessary to remove both tubes and ovaries, hysterectomy would be indicated. In the chronic cases operation ordinarily should not be performed in the presence of leucocytosis or decreased sedimentation time of the blood. In the streptococcic cases the infection remains latent in the tissues for years, therefore, operation should be postponed just as long as possible, as peritonitis may follow. In pelvic inflammation due to tuberculosis, Noyes recommends ultra violet light treatments. In chronic pelvic inflammation particular attention should be paid to the general condition of the patient. If the Wassermann reaction is positive, adequate antiluetic treatments should be instituted, and if there are systemic conditions, such as anemia, they should be corrected.

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## NECROBACILLOSIS—A CLINICAL ENTITY.

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Necrobacillosis is an acute infectious disease due to the Actinomyces necrophorus Löffler and is characterized by a coagulation necrosis followed by caseation. This condition was probably first noticed by Dammann,[1] who published (1876) the results of his investigations of diphtheritic infections in calves. Feldmann[2] reported similar cases in 1878. The organism was first investigated by Löffler, who obtained it from a rabbit into whose chamber of the eye he had placed a small piece of tissue from a condylomata lata. While Bang and Schultz[3] were investigating an epidemic of hog cholera in Denmark, Bang found he could kill hogs

by feeding them pure cultures of the short, ovoid and motile bacillus discovered by him in the tissues of the diseased hog. He also attributed the so-called diphtheritic patches to this bacillus. Schütz found a long thread-like bacillus in the caseous patches which he named B. filiformis. In 1888, he refers to finding similar bacteria in abscesses in livers of cattle. The following year Theobald Smith[4] found a long bacillus in sections of ulcers of

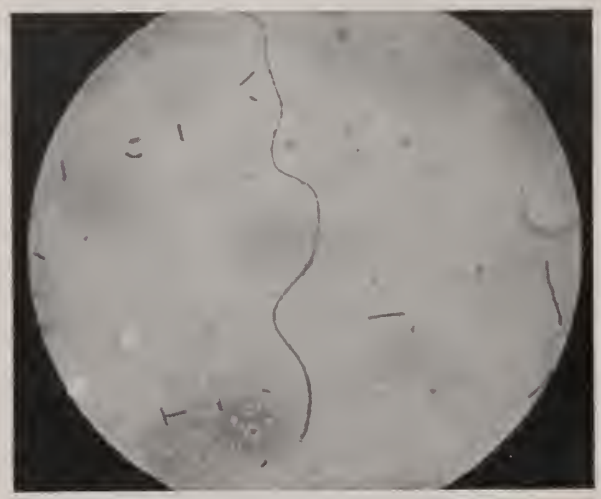

Fig. 1.—Photomicrograph of fuchsin stained smear from cooked-meat culture of A. necrophorus, showing filamentous forms with pleomorphic short rods.

hog cholera. The identity of these organisms was established in 1890 by Bang.[3] who gave the name nekrose-bazillus. In 1891 Schmorl[5] reported a fatal enzootic occurring the previous year among his laboratory rabbits. From the caseonecrotic lesions he isolated a thread-like bacterium which he named Streptothrix cuniculi. This organism was later identified as being the same organism as that described by Löffler and Bang. Schmorl and one of his assistants each had a small abscess on one finger from handling rabbits with spontaneous and experimental necrobacillosis. Stained smears of the pus showed the characteristic gram-negative beaded bacillus. In 1905 Ellerman[6] reported a case of a nine months old infant. who died with symptoms of laryngitis and pneumonia. Sections of the uvula showed necrosis with long thread-like bacteria on the border of the living tissue. The study of the bacillus led him to assume a primary infection with A. necrophorus.

Müller,[22] in 1906, reported the finding of A. necrophorus in a case of angina, which occurred in an eight-year-old girl. This patient recovered.

In 1910, Stemen and Shaw[7] described an acute infection of the skin in a patient who was a Federal Meat Inspector. This lesion followed a scratch on the back of the hand while conducting an autopsy on a sheep infected with necrobacillosis. The writer secured pure cultures of A. necrophorus from several of the bullae.

van Wering,[8] in 1923, described a case of necrobacillosis which occurred on the right arm of a patient, following a bite by a cow. A. necrophorus was isolated from the necrotic material.

In 1929, Wohlstein[9] isolated A. necrophorus from a human infection.

The year 1930 brought two authors and three cases. van Gelder[10] reported one case and Cunningham[11] two cases. Cunningham's cases were unique in that the organism was recovered from abscesses and necrotic tissue of the hip-joint and lung infarcts, and from the blood in the one case, and from a retro-pharyngeal abscess with gangrene and extension into the peritracheal and subcutaneous tissue and mediastinum in the other. Both of these patients died.

Fig. 2.—Deep colonies in 3/10 per cent agar containing cystine. Reflected light.

Recently, the writer isolated A. necrophorus from a lung abscess of man[23]. The organism was present in the abscess in pure culture.

In 1927, Harris and Brown[12] reported a new organism that may be a factor in the causation of puerperal infection which they named A. pseudonecrophorus. The attempt was made to

differentiate this organism from A. necrophorus on the basis of agglutination, fermentation of lactose, and hemolysis; and that it was not virulent for laboratory animals. Orcutt[13] studied ten strains from lesions in cows and found that none fermented lactose and that there is a variance in pathogenicity for laboratory animals. Orcutt found, also, that each immunizing strain apparently produces specific agglutinins since they are not absorbed by any other culture. A. necrophorus does not produce group agglutinins and this test cannot be used to differentiate the organism. Cesari[14] states that whether there is agglutination or not depends on the animal source of the organism; this, however, does not appear to be the case. Relative to hemolysis Cesari (loc. cit.) remarks that the organism is strongly hemolytic, while Balteano and Ukil[15] report that very little hemolysis is produced. I have found the organism to vary from non-hemolytic to strongly hemolytic and this was independent of the animal source. My observations on the inoculation of rabbits, the agglutination test, and the fermentation of carbohydrates have been that these are variable. It would appear, then, that Harris and Brown have added six cases of necrobacillosis to the literature and a new pathologic condition, as far as human cases are concerned, because this occurs in cows[16].

The human cases in which the diagnosis may be questioned include a case reported by Nander,[17] in 1919. He found a microbe presenting the morphologic characteristics of A. necrophorus in a gangrenous gland of man. But one isolated colony was obtained and this was not pathogenic. Scherber[18] recovered the same bacillus in two cases of erosive balanitis, but the organism could not be freed from the contaminating cocci. Casper and Schumann,[19] three years later, describe a questionable case in a farm laborer who was employed on a farm where the calves were attackd by A. necrophorus. Cunningham (loc. cit.) mentions a case which occurred in the practice of Dr. Kohn; this was probably an infection by A. necrophorus, as was also the case of Campbell and Shaw[20].

The principal pathologic conditions (other than man) in which A. necrophorus is found may be mentioned lip and leg ulceration of sheep, gangrenous dermatitis of horses and mules, necrotic stomatitis in cattle, and multiple necrotic foci in the livers of cattle and hogs. Spontaneous necrobacillosis has been observed in some nineteen species of animals: horse, cattle, fox, sheep, goat, deer, antelope, hog, ape, kangaroo, dog, cat, rabbit, guinea-pig, rat, mouse, chickens, buzzard and ostrich.

Fig. 3.—Deep colonies in 1½ per cent agar containing cystine. Note the lenticular shape. Transmitted light.

A. necrophorus is a pleomorphic anaerobe. It may vary from cocci to long filaments, and from solid stained rods to filaments with granules. Spores, in the usual sense, are not formed. Terminal bodies and polar staining are common. Clubbed forms are generally plentiful and fusiform dilatations may be present. What appear to be branches, but about which there is disagreement, are present in some preparations. The organism stains well with most of the aniline dyes.

The cultivation of A. necrophorus is rather discouraging at times. This is due to its being a strict anaerobe, and that it appears to develop only between thirty and forty degrees C.

The organism may be isolated from mixed infections either by plating or by inoculation, subcutaneously, into the rabbit. The material from the rabbit is then plated and a pure culture obtained. At times it may be necessary to inoculate a second rabbit with the material obtained from the first animal.

Several mediums have been used for the growth of necrophorus, but I have found a medium of veal infusion, peptone and cystine, prepared as per my method for the cultivation of B. tularense,[21] to be all that one could ask for. At times it will be necessary to add serum to the medium for the first few transplants. To obtain the cottony colonies one must not use too stiff an agar—one-half per cent being

sufficient for anaerobic conditions. Should the agar be too stiff the colonies will be lenticular and smooth. Of course, one must use the one and one-half per cent agar for plating.

Fig. 4.—Necrobacillosis of the skin; case of Stemen and Shaw (7).

Gas will generally develop in the cystine medium when it does not appear in other mediums; however, gas is generally produced from all mediums, and this gives the cultures a very disagreeable odor.

In cystine agar shake cultures there develops, in twenty-four to forty-eight hours, colonies with a brown or blackish center and a white fluffy border. The agar content should not be much above ½ per cent. Gas bubbles will be present in abundance and will break the agar, if the agar content is of the proper consistency.

Gelatin is not liquefied.

Relative to the fermentation of carbohydrates, there does not appear to be any regularity. All strains appear to produce acid from dextrose and most of them produce gas from this sugar.

Coagulated serum is not liquefied.

The action of the organism on milk varies with the strain used.

Hemolysis, as mentioned in an earlier part of this paper, is a variable quality, as is also the case in agglutination tests.

A. necrophorus secretes a toxin which is destroyed at 100 degrees C. No antitoxin has been prepared.

Subcutaneous injection of the microorganism into the rabbit produces an area of necrosis and, after a time, invasion of the internal organs. A few strains do not produce anything beyond the local lesion which heals. The mouse is susceptible, while the guinea-pig is generally immune.

The treatment of necrobacillosis is local and systemic,—potassium iodide (or salvarsan in van Wering's case) internally and the use of antiseptics in the cutaneous cases. Kelser recommends dilute acetic acid for scratches in horses.

## Conclusions

Necrobacillosis is a disease widespread in nature. Only a few infections in man have been reported, but these have been of such a variety of clinical manifestations and geographical distribution as to lead one to infer that the disease is of more common occurrence than the reports would indicate. The difficulty of isolation of anaerobes in general and of A. necrophorus in particular is probably responsible for the low record. Few anaerobic cultures are made, in general. From Cunningham's report, anaerobic cultures should be made of blood in all cases of infectious jaundice. Some of the tubercular hips are, in all probability, necrophorus infections.

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## ACUTE MANIA.*

A. F. WOOD, M. D., Parksley, Va.

In discussing this subject I shall employ the arrangement of its different phases that is commonly adopted in the various textbooks.

So we will first take up *synonyms*, among the number being chiefly acute delirium, acute delirious mania and, as the arrangement was first described by Bell in 1849, it is frequently also designated Bell's Mania.

*Definition.*—Tyson describes it as an acute violent delirium of unknown cause and undetermined lesion, running a course of two or three weeks or more, and usually terminating fatally. Others have ventured the statistical statement that 98 per cent are fatal.

In this paper I shall attempt to show that in a majority of instances of this disease or condition the cause can be traced and the lesion located by cerebral topography in connection with the patient's physical and emotional symptoms together with his previous habits of life, diet, exercise and general hygiene.

*Symptoms.*—The symptoms of acute mania are too well known to make it necessary to enumerate them at length. We are familiar with the delirium of acute alcoholism, typhoid, pneumonia, uremia.

One symptom obtained in all these types, as well as acute, so-called idiopathic, mania is obstinate insomnia. It is difficult to induce the patient to even approach the border line of sleep. But we find the cardinal symptom in Bell's mania invariably to be a series of phenomena that indicate a complete reversal of the patient's nature and his attitude towards or to outside objects and influences. This marked change holds until the mental storm is quelled.

*Morbid Anatomy.*—Definitely we know that there is congestion amounting to engorgement of the meningeal blood vessels—similar to varicosity—which at times goes the limit—of varicose veins in other parts of the body, in that the vessels are dilated, thickened and greatly weakened in some areas.

This congestion, in acute mania approaches a condition of inflammation, extending into the brain tissue through the cortex cerebri in the most severe cases. And this explains the occasional high temperatures, reaching at times as high as 106°-107°.

*Diagnosis.*—In mania accompanying the febrile diseases diagnoses should be plain sailing and should never be difficult in differentiation from acute delirious mania. In nearly every case of acute mania the past history of the patient, taken in conjunction with the cardinal symptom before mentioned—i. e., the reversal of the patient's response to outside impressions and his changed train of thought in the active stages of this condition—will put the diagnosis on the spot. We cannot mistake the picture revealed.

*Prognosis.*—Most writers inform us that it is almost always fatal, which sounds bad. But I believe that it is unnecessary for the majority of these people to die, at least in the delirium or active mania.

Modern therapy has developed agents which will control the delirium and produce natural sleep in these brain storms.

As to the final or end results in the causative condition, I am not yet prepared to give an authentic opinion—but at the very least in the intelligent control of the delirium we preserve our patient's lives from the jaws of an almost immediate violent death—and thus may continue our efforts to locate and remove the causative factor.

A dead patient leaves the doctor nothing to work on, but his family, and we will spend the rest of our lives explaining how the calamity happened, and, if we knew so much, why we did not check the disaster and save the dear one.

Also our source of income partly stops. And is likely to wholly cease in this particular domestic group.

This sounds commercial but is after all material. Specialists and sanatoriums rarely have to explain—as they send the "corpus" deleted back to the homefolks and leave the explaining to the family doctor.

So the prognosis is not almost always fatal, as Tyson persuades us to believe.

*Treatment.*—Tyson says, "This *must* consist of measures to control the mania, of which 'hypos' of morphine are almost alone efficient and these often feebly so."

The morsel of fact in that statement is wholly expressed in the phrase "*feebly so.*" Morphine always has a feeble effect alone and in a vast majority of cases has no beneficial effect, or seems to act as an excitor, intensifying the delirium. Large doses, even combined with hyoscine, fail to produce sleep, which is so essential, except in delirium of milder

*Read before the Accomac County Medical Society, February 21, 1933.

forms, such as delirium tremens, and such benefit as these drug compounds offer is more than offset by the resultant obstinate constipation which has later to be overcome. Chloroform and ether only act while exerting their direct effect and the delirium returns the moment they evaporate from the patient's system. Both have toxic effects, if continued, more dangerous than huge doses of morphine.

Blood letting offers a real temporary relief, but will serve to physically weaken the patient, and must be discarded. Bromides are useless and chloral is far too dangerous and uncertain to be persistently used.

Of all the older drugs hyoscine alone or in combination with other hypnotics has served me best, but all these old stand-bys have seemed to lack the "it" necessary to control the delirium of the severe forms of acute delirium or mania.

This brings me to the main point of my intention in writing this paper, which is to describe the action of a new and powerful drug, which is safe in large doses, frequently repeated, and has no inconvenient after-effects—with no danger of habituation. This drug is a combination of old familiar agents rather than a new drug. It is a white amorphous powder formed by combining magnesium with amidopyrin, and is marketed in tablet form under the registered name magnepyrin. A great many physicians are familiar with this drug's action in a great variety of nervous conditions, but I have yet to observe a report on its use in acute mania.

In four recent cases I have secured signal success with it alone or in such combinations as the condition of the patient indicated at the moment of use, though I have carefully avoided morphine on account of bad after-effects.

It will best serve my purpose to describe its action in one particularly severe and apparently hopeless case.

A white woman, Mrs. A., aged 50, who had been a patient of mine for fourteen years, was a brunette of the emotional type. Height, 5 feet, 3 inches, weight 158 lbs. Well proportioned, but beginning to accumulate excess fat especially in the mid-abdominal region.

On account of the nature of her regular work, performed regularly and faithfully, lately to her own undoing, the muscles of her arms and legs were free of flabbiness.

She is a woman of much energy and above the average intelligence, with a High School education, rounded off in the university of experience.

Her life since girlhood has been one of strong emotional excitement. Daughter of a clergyman.

Very young, she married an industrious farmer, who has applied himself conscientiously during their married life (33 years) in an effort to absorb all the surplus alcohol in his immediate locality—doing well in his ambition, through good and bad years and wet and dry years.

In the thirty-three years this woman has delivered to the world thirteen mature full-termed children (seven living) and has dragged through fifteen premature births and abortions.

She has run the gamut of about all difficult deliveries except cesarean section and symphysecotomy, all tending to lower her physical resistance and which of necessity had resultant effects on her mental structures, or, I might more properly say, on her mental actions and reactions.

Since the birth of her last child, a girl two years old, she has shown markedly the effects of these great and sustained strains.

Her skin had become sallow, almost bronze, which indicated general dysfunction of ductless and other glands.

She had become irritable and unable to sleep more than a few hours of the twenty-four, the long intervals being spent in brooding as she went about her work. There was inability to focus her sight. Blood was normal in specific tests, hemoglobin and cell count. Blood pressure was from 180 mm. S.—100 mm. D., to 340 mm. S.—180 mm. D., always running an abnormally high pulse pressure, generally much over 100 mm.

This was always practicably the same in both arms and legs with a 10 mm. under-reading on the left side.

*Pulse* 72-86, always tense, nearly always regular, the blood vessels to touch giving the impression of thickened and hardened walls.

*Heart sounds* loud and transmitted to all parts of thorax and upper segment of abdomen, with forcible apex beat in its normal position in fifth interspace. There was apparently no cardiac enlargement or dilatation.

*Mouth* was normal except furred tongue, coated, very narrow and pointed, and extremely red at tip and borders.

Teeth and tonsils were in exceptionally good condition.

Nostrils were clear and open. Ears and hearing normal, except subjective sign of roaring in ears.

The *lungs* were normal.

This patient had periodic attacks of constriction of the esophagus.

Abdomen distended, inflated, with some tendency to ptosis. No masses revealed on palpation.

Inguinal region normal.

Limbs show nothing abnormal except slight varicosities in both lower legs. There is some ankle edema, especially after much work in a standing position.

Menstruation regular, copious, painful, and at times necessitating confinement to bed for several days.

Perineum in good condition but cervix had been lacerated on each side at birth of first child, when Hodge forceps had been employed with forcible traction. Nature had done a wonderful piece of repair work here.

*Urine*—Twenty-four hour quantity normal, light straw in color or high colored and scanty, depending on how faithfully she carried out her dietetic instructions and hygiene.

Specific gravity 1020-1000. Albumen in variable amounts at different analyses, and hyaline and granular casts always more or less present. Sugar tests negative.

She had become constipated, suffered from almost constant headaches of the pulsating throbbing type, mainly at apex, rather more concentrated in intensity to left side of cerebrum, running into left eye and temple.

Her appetite had become almost uncontrollable late this past fall, at times, for days she would gorge without discrimination as to variety of food. Then she would become sick enough for special attention.

She gradually changed in her demeanor, becoming retired and reserved, never leaving home except on occasional visits to my office, about headache mainly, but always reverting to a multitude of other symptoms—real and imaginary.

The general economic depression, financial shortages at home, steadily increasing, served to bring on an *anticrises* in October. This was something similar to an attack of hysteria, which was fairly well controlled by luminal and common hygienic measures with particularly careful dieting and rest.

However, the attack left her with her left side of face drawn and numb, and anesthesia of right arm and leg and buttocks.

The sensory disturbance soon cleared up, but the limbs atrophied slightly, which demonstrated nutritional brain center disturbance on the left side.

This brings us to the attack of sudden acute mania, which appeared Saturday, January 5, 1933, at 8:00 P. M.

I found the patient in a state of wild delirium, necessitating forcible control. Her entire catalogue of former ideas had been completely upset.

Her tendency was to do violence to herself or anything or any body.

She ran a constant rapid fire of incoherent language in a loud voice, so rapid that it was difficult to translate all she said into intelligible English.

Her appearance was that of a real maniac. Temperature 105.5° in axilla. Pulse 140 and bounding.

Now what to do puzzled me, so, in a flurry, I gave luminal, hypodermics of hysoscin in massive doses, repeatedly, with apparently no effect save to increase and magnify if possible the distressing condition.

Thus I proceeded six hours. The storm, rather than becoming pacific, only intensified.

So pondering, I remembered a recent drug that had been called to my attention, and decided I had nothing to lose in employing it. Consequently, I began hourly doses of two to three tablets of another agent, the magnesium-amidopyrin compound.

We put them in her mouth, forcibly opening clinched teeth, she grinding them readily though refusing water.

After the fourth dose she became quieter and an hour later was in a deep normal appearing sleep.

I left her thus with instructions for absolute quiet at all costs—watches and the clock being removed from her room, in addition to which hinges of the doors were ordered greased.

She slept eighteen hours, then roused complaining slightly of headache. This was controlled by added doses of magnepyrin, the patient dropping back into slumber for another eighteen hours, with occasional waking inter-

vals, in which she would now take a swallow or two of water.

After this she became awake for longer periods and would take more water and orange juice and began to voluntarily void urine.

About the fourth day she became much brighter, and seemed normal, after the action of a heavy dose of saline, asking for certain articles of food and for her baby.

From now on she made rapid gains, until at the end of the week she was sitting propped up in bed, looking much better and acting more nearly herself than I had seen her for months.

A week ago I tucked her into an automobile bound for Philadelphia and Washington, on a visit to married children and the Inauguration of President Roosevelt. She was slim, animated, youthful, anticipation showing in her face and much better to look at than I had ever seen her—altogether a pretty picture. My end-result was a work of art, truly.

I shall try to keep her away from home until the Fourth of July or longer, especially as she was accompanied by her baby.

I think that other physicians who give this ailment serious thought will agree with me that, while acute mania has been considered rather rare and not worthy of much attention except by experts in private and state hospitals, that it has in late years become much more frequent than of yore, and that it is growing in frequency and intensity, due to changed economic and social relations, and that we should prepare ourselves as best we may for the coming inevitable battle with this abnormally malignant foe to society and to medicine.

It is my impression that magnepyrin is not perfect and that it can be improved, but at the moment it may be considered the most valuable aid we have in such cases.

I do not like the name acute mania, as I regard it, rather than a disease, as a condition or symptom culminating in the brain, the result of the sum total of various derangements in other parts of the body.

I would consider it a dereliction of duty if I closed this paper without entering a vigorous protest against the indiscriminate use of ductless gland products and radium that is becoming such a dangerous practice—commonly resorted to by specialists and practitioners alike. The cases should at least be most carefully selected. I have never seen much good result from their use, but have frequently witnessed harmful results, impossible to measure in terms of relief and health.

I do not think any one knows the endocrine dosage, and radium emanations are ungovernable.

I also would like to add that this paper was primarily written for the benefit of the country doctor and country patient and that I am not deriding the methods of the city specialist or sanatorium, nor am I trying to dictate methods of therapy. I do not claim originality, except that I have my own method of arriving at a conclusion and am not hampered by cut and dried rules, old or recent.

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## TONSIL ELECTROCOAGULATION WITH THE BI-ACTIVE ELECTRODE.

J. B. H. WARING, M. D., Wilmington, Ohio.

It is doubtful if removal of the tonsils by electro-coagulation technic will ever entirely supersede surgical enucleation of the tonsils; but in selected cases this newer technic offers such obvious advantages that every throat specialist owes it to his patients to perfect himself in the technic so as to be able to offer it to his patients where best indicated.

Excellent work has been done with the single active electrode by Plank, Dillinger, Silvers, Balmer, and many other operators, who have led the way towards perfection of the technic. L. L. Doane, of Butler, Pa., pointed the way towards still further perfection of technic by development of his ingenious set of indifferent electrodes for application directly towards operative area. These instruments not only simplified the technic, but, by elimination of most of the tissue resistance to be overcome, made coagulation possible by a markedly weaker current, which naturally meant less tissue reaction and discomfort of the patient.

Still more recently, however, Haiman, of New York, Jiros, of Chicago, and other operators, have developed a bi-active electrode technic, which has brought the method to a still higher stage of ease and efficiency.

In the Haiman and Jiros instruments the inactive and active terminals are contained in a single-insulated handle and terminate in curved needle points a few milliamperes apart, so that the only tissue resistance to be overcome is the tonsil tissue between the two needle points. In my own work I prefer straight needle electrodes, but this is a comparatively minor matter. Using on an average say 3,500

milliamperes for mono-terminal electrode coagulation treatment, we are able to effect perfect coagulation with approximately 1,200 milliamperes with the bi-terminal electrode; not only this, but the double needles cover the ground of coagulation much more rapidly, and with very little discomfort to patient.

One unhandy step in this technic was inability of the operator to retract the anterior pillar on the treated side, depress the tongue, and manipulate the electrode without assistance. With a pillar retractor in the hands of an assistant, it was somewhat difficult still to secure efficient pillar retraction at all stages because the assistant could not well see into the throat with the operator's head in front of the patient's mouth.

To eliminate this difficulty, I developed several years ago a combined tongue depressor and pillar retractor, which was termed a tonsilloscopic tongue depressor. Since then several similar instruments have been described by other operators who encountered the same difficulty. While of much assistance in the work, the new instrument was not entirely satisfactory; but after considerable study the instrument has been largely re-designed, with complete elimination of the defects noted in operation of the first model. Now we have a combined tongue depressor and pillar retractor, held in one hand of the operator for perfect exposure of either tonsil, while the other hand is free for operation of the electrode. This new instrument has eliminated the last difficulty encountered in this technic, and, in addition, has proven of very great value in surgical tonsillectomy, not only for pillar retraction and examination of the tonsil prior to enucleation, but of still greater value in complete exposure of the entire tonsil fossa after the tonsil has been removed surgically. Thus the operator's other hand is free for manipulation of swabs, sponge forceps, hemostatic forceps, or suture instruments, as indicated in the given case. Many operators prefer to work with an insulated tongue depressor and pillar retractor. In my work I find this unnecessary, but it is a very simple matter to insulate the instrument if desired—that is, the improved model combined depressor-retractor.

For treatment, the patient may dissolve a nupercaine or other anesthetic throat lozenge in the throat beforehand, followed by a nupercaine throat spray if gagging is very active. For actul anesthetization of the surface of pillars and tonsil to be treated, I find 10 per cent cocain most satisfactory, swabbed over the operative area a few times.

Our high frequency machine, foot-switch controlled, is set by meter to deliver approximately 1,200 to 1,500 milliamperes of current. This current setting may be changed slightly as conditions indicate. With patient seated in chair, tongue and anterior pillar of tonsil to be treated are depressed and retracted with the tonsilloscopic depressor in one hand. This affords a perfect direct view of the entire tonsil, with the anterior pillar retracted out of the way. Going around periphery of tonsil first, but taking care to keep coagulation away from the pillars, the entire surface of tonsil is quickly covered with successive applications of the bi-active or twin-needle electrode, taking perhaps six or eight contacts in all. The coagulation should be effective in one or two seconds at the most: if not, the current should be readjusted with this end in view. The entire treatment should not take over five minutes. The operative field is illuminated by means of an electric head-light, or preferably with the ordinary reflecting head-mirror. The electrode is held in whichever hand is most convenient for the given tonsil, the depressor-retractor holding the other. No assistance whatsoever is required with this equipment and technic; and patients express themselves as much pleased with its ease and rapidity.

There is little pain or after-discomfort. A few throat tablets containing nupercaine or other anesthetic may be given the patient, but these are rarely required. With the bi-terminal electrode both tonsils are treated at the one sitting, treatments being repeated as a rule in a week or ten days; or just as soon as all coagulated tissue has cleared off from the previous treatment. As a rule from three to six treatments are required.

For removal of fragments of tonsil left after an incomplete surgical tonsillectomy, the coagulation technic is ideal; usually one or two light treatments will clear up a fossa perfectly. The technic is not well adapted to removal of children's tonsils; but, fortunately, removal of the tonsils in children may be accomplished surgically with ease, rapidity, and with a minimum of disadvantage.

While coagulation removal of the tonsils requires a period of time for accomplishment,

this is rarely of any consequence; and is far more than offset by fact that the patient is free during the entire period of treatment to pursue his or her usual avocation without loss of time, and can eat the usual meals, etc. Coagulation removal of the tonsils, with proper technic, is practically without danger or major complications, which is not always the case with a surgical tonsillectomy.

*Egan Building.*

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka Street, Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Avenue, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 South Market Street, Petersburg.
*Corresponding Secretary*—Mrs. Charles A Saunders, 1000 Gates Avenue, Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Avenue, Richmond.

## Richmond News

At the November meeting of the Richmond Auxiliary, new officers were elected, for the coming year, as follows: President, Mrs. James B. Dalton; vice-presidents, Mrs. T. B. Washington and Mrs. H. B. Hinchman; recording secretary, Mrs. L. C. Pusch: corresponding secretary, Mrs. Warren F. Draper; and treasurer, Mrs. J. B. Stone.

On December 1st, the Richmond Auxiliary served lunch to fifty five-point children, from various counties and cities, who were given the trip to Richmond in recognition of their superior physical fitness. This is the second year this service has been rendered. The committee in charge is to be congratulated on the efficient and attractive manner in which this work was done. The equipment at the kitchen of the new Academy Home and Library was used and luncheon served in the very lovely dining-room.

## Dr. Abell's Approval.

There have been times when we as auxiliaries may have felt discouraged. There may have been times when we have felt that perhaps we were almost considered a necessary evil. There have been times when we have questioned our own selves as to whether we really had an excuse for being—whether or not the efforts we made were justified by the results achieved. To those of us who may have had these feelings the words of approval and encouragement of Dr. Irvin Abell were most comforting.

Dr. Abell who was president of the Southern Medical Association spoke to us in Richmond at the meeting in November. He considers welfare work one of the chief fields for our activities, and hospital work, especially children's hospitals, as a most fitting phase of this type of work. He has seen amazing results in hospitals whose needs have been taken up by auxiliaries. The demand for articles of clothing, equipment, books, and entertainment for convalescent children is never-ending.

A study club for self-improvement and every effort to disseminate knowledge on health education was urged by Dr. Abell along with the stimulation of interest in the collection of historical data. He called attention to the rich store of material already on hand and the possibilities of further most interesting research along this line.

Our activities should not be professional, but civic and social. The last but not the least point stressed was the creation of an atmosphere of wholesome good fellowship. This last result would in itself be an adequate reason for our existence as an organized group.

We were most grateful to Dr. Abell for his gracious words of appreciation.

## Resolutions of Appreciation.

Mrs. Peachy R. Gilmer, Acting Chairman of the Committee on Resolutions, submitted the following report at the meeting of the Auxiliary of the Southern Medical Association in Richmond:

Whereas: The members of the Woman's Auxiliary of the Southern Medical Association wish to express their sincere thanks to Mr. C. P. Loranz, Executive Secretary of the Southern Medical Association, for his excellent assistance to the Auxiliary, and

Whereas: The members of the Auxiliary wish to express their gratitude to the Press of Richmond for effective handling of all publicity, and

Whereas: The members of the Auxiliary wish to express their deep appreciation and very genuine enjoyment of the courtesies and hospitality extended them by the Woman's Auxiliary to the Richmond Academy of Medicine, to the Woman's Auxiliary to the Medical Association of Virginia, and in particular to Mrs. Douglas VanderHoof, and

Whereas: The members of the Auxiliary wish to express their heartfelt debt of gratitude to the officers, Executive Board, and standing committees for

the year 1933, of the Woman's Auxiliary of the Southern Medical Association, and

WHEREAS: The members of the Auxiliary wish to extend sincere thanks for the cooperation and inspiration of the Advisory Board of the Southern Medical Association, and

WHEREAS: The Members of the Auxiliary wish to express their appreciation for the cooperation of the Jefferson Hotel management, and

WHEREAS: We wish to express deep regret that Mrs. Stuart McGuire, General Chairman of the Richmond Convention, was unavoidably prevented from attending; now, therefore,

BE IT RESOLVED, That the corresponding secretary be instructed to write appropriate letters to the above mentioned groups and individuals.

Respectfully submitted,

JULIA MORROW CHURCH GILMER.
(Mrs. P. R. Gilmer)

### Woman's Auxiliary to the Southern Medical Association.

At the tenth annual session of this Auxiliary, held in Richmond during the Southern Medical Association meeting, Mrs. Southgate Leigh, Norfolk, was installed as president and the following officers were elected: president-elect, Mrs. J. Bonar White, Atlanta, Ga.; vice-presidents, Mrs. J. Allison Hodges, Richmond, and Mrs. L. L. Polk, Purvis, Miss.; recording secretary, Mrs. William Lett Harris, Norfolk; treasurer, Mrs. Oliver Hill, Knoxville, Tenn.; parliamentarian, Mrs. Preston Hunt, Texarkana, Texas; and historian, Mrs. Seale Harris, Birmingham, Ala. Miss Emily Allen, Norfolk, was appointed corresponding secretary by Mrs. Leigh. Chairman of the various committees were also named at this time.

### A Message from the National President.

Mrs. James Blake, President of the Woman's Auxiliary to the American Medical Association, has the following message in her "News Letter" for November:

"I wonder—have you ever heard the slogan, 'Undertake less; accomplish more'?

"Well, Mrs. Alice Ames Winter some years ago wrote a book, 'The Business of Being a Club Woman,' and I have borrowed her slogan. I do want you all to study this slogan, and try in our work to know what we do know as well as we can, and not merely skim the surface. The 'Program' of 'Health Education' work under Mrs. McGlothlan is the basis of all our Auxiliary activities, and wise is the state president who will follow the lead, 'Undertake less; accomplish more.' In every state the program committee is the most important. For the character of an Auxiliary depends upon its working program, and the program depends upon the characters of those who build it; how sincere of purpose they are; how well they understand the needs of their Auxiliary, and the community it serves, and how able they are to meet those needs. Every Auxiliary represents a cross section of community life. Through its membership it contacts one or more of the other groups that perhaps direct the activities of that cross section. It may be a home group, a church group, the social group or even a political group. To each of these groups our doctors' wives are contributing largely from the experiences that have come to them as community leaders, and if their program work in the Auxiliary has been in good hands, they have a wide range of material to offer. Every state and county in our nation is facing problems right now. Please, as Auxiliary members, study *your* side of every question before you move on with the masses. . . . The Auxiliary woman of the future must be a woman strong in every sense of the word, not only physically and mentally but morally and spiritually as well."

## Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted:

Abbott Laboratories
- Abbott's Haliver Oil, Plain Capsules
- Phenobarbital Sodium—Abbott

Lederle Laboratories, Inc.
- Gas Gangrene Antitoxin Polyvalent—Not Refined
- Antipneumococcic Serum, Refined and Concentrated, Type II

Mead Johnson & Co.
- Mead's Viosterol in Halibut Liver Oil 250-D (In Capsules)

Sharp & Dohme, Inc.
- Arizona Ash Pollen Extract—Mulford; Barnyard Grass Pollen Extract—Mulford; Birch Pollen Extract—Mulford; Chrysanthemum Pollen Extract—Mulford; Hemp Pollen Extract—Mulford; Mesquite Pollen Extract—Mulford; Papaw Pollen Extract—Mulford; Primrose Pollen Extract—Mulford; Arizona Walnut Pollen Extract—Mulford; Sycamore Pollen Extract—Mulford; Saw Grass Pollen Extract—Mulford; Sagewort Pollen Extract—Mulford; Prairie Sage Pollen Extract—Mulford; Pasture Sage Pollen Extract—Mulford.

E. R. Squibb & Sons
- Concentrated Antipneumococcus Serum, Types I and II
- Diluted Diphtheria Toxoid for Reaction Test, 1 c.c. Ampule

Winthrop Chemical Co., Inc.
- Luminal Sodium Solution in Ethylene Glycol.

The following product has been included in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Non-official Remedies, 1933, p. 437):

Merck & Co., Inc.

Guaiacol Carbonate—Merck.

### PROPAGANDA FOR REFORM

Rule Governing Advertising to Physicians.—The Committee on Foods reports that the section "Rules Governing Package Label and Advertising" of its rules and regulations has been amended to state that advertising intended solely for the physician may include disease names and information supported by sufficient evidence regarding the special use of foods in the diet of the sick, but that such advertising shall not treat foods as medicines or attempt to transform foods into therapeutic agents. (Jour. A. M. A., August 19, 1933, p. 605.)

Bacteriophage Water Purification—Both proponents and opponents of the environmental bacteriophage sterilization theory have resorted to little more than dialectic evidence. The currently reported crucial tests by Prof. Paul J. Beard, of the sanitary engineering department at Stanford University, therefore, are a timely service to the clinical profession. They represent the type of work that should have been undertaken a decade ago, before the speculative pros and cons had been given such wide publicity. In none of these tests did the bacteriophage show the least effect on the corresponding bacteria. Moreover, none of the exposed bacteria became phage resistant. Professor Beard concluded that the experiments simulate adequately the natural conditions under which bacteriophage must function if it is to participate significantly in the reduction of bacterial numbers in polluted water or in sewage. (Jour. A. M. A., September 2, 1933, p. 782.)

Phenanthrene.—Dr. Lyndon F. Small, of the University of Virginia, and Dr. Nathan B. Eddy, of the University of Michigan, are engaged under the auspices of the Drug Addiction Committee of the National Research Council in a systematic chemical and pharmacologic study of morphine and its derivatives and of substances synthesized from phenanthrene. Phenanthrene is a comparitively simple substance which is obtained from anthracene in oil. A partially hydrogenated phenanthrene forms the skeleton, to which are attached the active groups of the morphine molecule. Phenanthrene itself, however, is but a poorly soluble substance of very low toxicity and produces only a mild degree of depression in the animal body much like that following a small dose of a barbiturate. Aside from its very weak depressant action, the effects of phenanthrene in no way resemble those of morphine. (Jour. A. M. A., September 16, 1933, p. 950.)

# Book Announcements

**Medicine in Virginia in the Nineteenth Century.** By WYNDHAM B. BLANTON, M. D. The third and last book of the series published under the auspices of the Medical Society of Virginia. Richmond. Garrett and Massie. 480 pages with illustrations. Price, $5.00 to members of the Medical Society of Virginia.

**Pediatrics.** By HENRY DWIGHT CHAPIN, M. A., M. D., Professor-Emeritus of Pediatrics, New York Post-Graduate Medical School, Columbia University; Founder and Medical Director of the Speedwell Society, etc. And LAWRENCE T. ROYSTER, M. D., Professor of Pediatrics and Head of the Department of Pediatrics, University of Virginia. Seventh Edition. Revised and rewritten by Lawrence T. Royster, M. D. Baltimore, William Wood and Company. 1933. Octavo of 775-xvi pages. Cloth. Price, $7.00.

Dr. Royster's book "Pediatrics" which is the revised and rewritten edition of the sixth edition of Chapin and Royster's Diseases of Children, has recently appeared from the press.

In comparing the two books, the last or seventh edition has an additional one hundred pages. There have been revisions throughout with addition of new material. The most striking addition is in the section on growth where a chapter formerly consisting of fifteen pages has been enlarged to five chapters totaling sixty pages.

The first chapter in this section is on fetal growth and development which is a treatise in the nutrition of the fetus and its relation to its mother, showing that the science of pediatrics begins during the prenatal period.

The next two chapters deal with the development of the various tissues of the child's body and its growth. Tables for height and weight are included. There are additional tables in the appendix.

The chapter on development and growth by age periods is well handled and instructive and makes enjoyable reading. The last of these chapters shows how to appraise the child.

As is expected, the section on infant feeding is brought up to date and that part which deals with the diarrhoeas has been rewritten to agree with our present knowledge.

Reading through the remaining pages, one sees revisions throughout. Particularly welcome are those on the blood dyscrasias and nephritis.

The new edition is free of plates and has fewer pictures. However, these are not needed to make the text clearer. It was quite possible that the plates showing the exanthemata were more misleading than instructive.

After reading through the text, it appears that Dr. Royster has put forth a good sound textbook on Pediatrics.

L. E. Sutton.

**Food in Health and Disease.** Preparation, Physiological Action and Therapeutic Value. By KATHERINE MITCHELL THOMA, B. A., Director of Dietetics, Michael Reese Hospital, Chicago. Philadelphia. F. A. Davis Company. 1933. Octavo of 370 pages. Cloth. Price, $2.75 net.

"Food in Health and Disease" by Katherine Mitchell Thoma, B. A., is written primarily for nurses and student dietitians, yet it covers the field so clearly and well that it is doubtful if any practitioner could read it without profit.

The book is divided into three parts: the first deals both with fundamental food facts and the physiology of digestion, the latter being covered superficially but nevertheless the fundamentals are all included.

The second portion of the book deals with food as related to disease. Here the points emphasized are in keeping with the best authorities on this subject. The last section deals with laboratory procedures. The recipes appear tempting, yet, of course, "a meal on paper" may be quite different from one on a tray.

Probably the best features of the book are the resumé tables and sample menus—all in all it would be hard to improve on this work as a textbook for nurses and student dietitians.

H. W.

**Food, Nutrition and Health.** By E. V. McCOLLUM, Ph. D., Sc. D., and J. ERNESTINE BECKER, M. A., Professor, and Associate, of Biochemistry, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md. Third Edition. Rewritten. Published by McCollum and Becker, Baltimore, Md. 1933. 12mo of 146 pages. Cloth. Price, $1.50, postpaid.

"Food, Nutrition and Health" by McCollum and Becker, is a small book, only 142 pages, yet it contains all the fundamentals regarding food and its relation to health. All the important factors of this broad subject—viz—carbohydrates, proteins, minerals and accessory food factors are discussed in a well written and to-the-point style.

Probably one of the most valuable chapters in the book deals with food as related to preventive dentistry. Recipes and menus take up only a small part of the written matter, yet all the important and necessary tables are included, also including a guide for seasonal menus, and a very complete table showing the distribution of vitamins in various foods.

The book's conciseness—the author's ability to distinguish between fact and fancy, and its non-technical language, all keep it a volume that is not only valuable to dietitians and practitioners, but to laymen as well.

H. W.

**Report to the United States Government on Tuberculosis, with Some Therapeutic and Prophylactic Suggestions.** By S. ADOLPHUS KNOPF, M. D. Procurable at the office of the National Tuberculosis Association, 450 Seventh Avenue, New York. Octavo of 59-xiii pages. Illustrated. Cloth. Price, $1.15.

This report is an attractively bound fifty-nine page volume by S. Adolphus Knopf, M. D., covering his attendance at the International Union Against Tuberculosis, held at The Hague, September 6-9, 1932. It is largely devoted to extolling the virtue of his hobby, controlled diaphragmatic breathing. Chapter one is taken up with a discussion of Gold Therapy (Sanocrysin), and the author agrees with most American observers that this remedy has not proven of value either clinically or experimentally. There are, however, some capable continental physicians who believe Sanocrysin to be of value in selected cases.

In chapter two a contrast is made of our method of caring for ex-service men and that of England, France and Germany. The author believes our method to be the most generous and adequate of any coming under his observation. Attention is called to the importance of massage and hydrotherapy in preparing patients to return to their home and work. The reviewer regrets that so few tuberculosis hospitals are equipped to give this supplementary treatment to out-going patients.

The success of some European hospitals in the treatment of skin tuberculosis with salt free diet is briefly discussed.

The reviewer deplores the author's failure to discuss surgical collapse, a therapeutic procedure that is now receiving world-wide attention, and is without a doubt the most important contribution to treatment and eradication of tuberculosis since discovery of the tubercle bacillus.

Edgar C. Harper, M. D.

**Post-Operative Treatment.** By GEORGE SANFORD FOSTER, M. D., Surgeon to The Lucy Hastings Hospital, Manchester, N. H. The Christopher Publishing House. Boston. 1933. Octavo of 323 pages. Illustrated. Cloth. Price, $5.00.

**Bureau of American Ethnology.** Forty-eighth Annual Report to the Secretary of the Smithsonian Institution. 1930-1931. United States Government Printing Office. Washington, D. C. 1933. Quarto of 1220 pages. Paper cover. For sale by the Superintendent of Documents, Washington, D. C. Price, $2.00.

**Voluntary Motherhood.** A Discussion of the Various Contraceptive Methods, with Emphasis on Generally Approved Techniques. By Antoinette F. Konikow, M. D. Buchholz Publishing Company Boston, Mass. 1933. Fourth Edition. Completely rewritten. Octavo of 36 pages. Illustrated. Paper. Sold only to physicians. Price, fifty cents.

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# Editorial

**The Beaumont Centenary.**

One hundred years ago an American medical classic was published in Plattsburgh—*Experiments and Observations on the Gastric Juice and the Physiology of Digestion*, by William Beaumont, M. D., surgeon in the United States Army. Here is given an accurate description of the gastric juice, the motions of the stomach and the effects of psychic influences on digestion. Hydrochloric acid is identified, a Virginia professor, Robley Dunglison, making some of the analyses. The relative digestibility of various articles of food, the rapid disappearance of water from the stomach. the harmful effects of overeating, as well as the fact that the amount of gastric juice varies with the amount of food ingested, constitute some of the original contributions of this pioneer American student of physiology. Beaumont "tells plainly what he saw and leaves every one to draw his own inferences, or where he lays down conclusions he does so with a degree of modesty and fairness of which few perhaps in his circumstances would have been capable." Michigan, where he first began his experiments, has erected a monument to him. St. Louis, where he later lived and practised, has repeatedly honored him. Today the whole American medical profession, eagerly embracing the opportunity to place him in the first rank of scientific investigators, celebrates this centennial.

**The Danger of Iodized Salt.**

Two years ago the Medical Society of Virginia appointed a committee consisting of William H. Higgins, N. G. Wilson and H. B. Mulholland to determine, if possible, the influence of iodized salt on the incidence of simple goitre in Virginia. Their report is now in hand. For obvious reasons the committee saw fit to include in its investigations the relation of iodized salt to the development of toxic goitre also. A copy of the whole report is printed elsewhere in this issue of the Monthly.

While recognizing the value of iodine administration in the prevention of the disease in goitrous belts our investigators point to the probable increased incidence of toxic cases, and by way of warning state "that in non-goitrous sections [some parts of Virginia] the widespread use of iodine in any form is not justifiable and may prove to be distinctly detrimental."

The committee feels that more information is necessary before rendering its final opinion concerning the relation of iodized salt to toxic goitre. To facilitate its work it has sought the cooperation of twenty-eight hospitals in the state and questionnaires have been sent to each

asking for tabulated information covering all cases of toxic goitre admitted to these institutions. Without the help it seeks the committee can hardly hope to assemble sufficient data from which to draw reliable conclusions.

**A New Book.**

*Adolescence, Life's Spring Cleaning Time* is a new book by Beverley R. Tucker, M. D., author of *The Gift of Genius* which a few years ago received wide and merited praise. In this instance Dr. Tucker brings to bear upon a timely subject the large fund of neurological and psychiatric knowledge in which he, the professor of these subjects in the Medical College of Virginia, is thoroughly versed. The book clearly and succinctly outlines the various diseases, complexes and maladjustments to which adolescence is subject. More than this it shows a sympathy for and understanding of the problems of youth that will make the wholesome admonitions that crowd its pages acceptable to the adolescent as well as to those who shape his destiny—his parents and his teachers. Dr. Tucker relates the problem of adolescence directly to medicine, showing how often the complaints, frustrations and behavioristic disorders of this period may be an expression of disease. He also makes it clear that wherever there is conflict between youth, his system of education and the social order and some reorganization is imperative, adjustments must always be made by society and the educators in the interest of the overbalancing necessities of youth.

**The Richmond Meeting of the Southern Medical Association.**

The fifteen hundred and fifty-six physicians who attended the Southern Medical Association in Richmond, November 14th-17th, were thoroughly representative of the sixteen Southern states which compose the Society. From Virginia there were registered 516, from North Carolina 192, from Georgia 87, from Maryland 84, Tennessee 82, District of Columbia 78, Alabama 56, Kentucky 53, West Virginia 53, South Carolina 40, Mississippi 35, Florida 34, Louisiana 33, Texas 29, Missouri 22, Arkansas 12, Oklahoma 11. With such evidence of Virginia's popularity as a meeting place it is hoped that another nineteen years will not elapse before the society again comes to this state.

**The Movies and Health.**

Some astonishing facts are brought to light in a recent investigation made at the request of the Motion Picture Research Council supported by the Payne Fund in a series of monographs popularly summarized by Henry James Forman in a volume called *Our Movie Made Children*. The report reveals that:

28,000,000 American children attend the movies every week.

11,000,000 of these children are under eleven years of age.

The average motion picture is heavily freighted with sex, love and crime. (An analysis of 1,500 films.)

Little passes over the head of the average child—he remembers seventy per cent as much of what he sees as does the adult.

The motion picture is capable of powerfully shaping the attitude of youth toward many questions—race prejudice, capital punishment, gambling, etc.

The conduct patterns of many children are moulded by the movie through imitation, a well-known characteristic of childhood. Wide sampling among youthful criminals and delinquent girls shows that many of their ideas and methods are traceable to motion picture influence.

The deterrent and correctional effect of the better type of picture is slight and short lived.

When the movie-going child is contrasted with the non-movie-going child, the latter is found to have a better school record both as to conduct and scholarship, to be emotionally more stable and more popular with other children.

That part of the report which deals specifically with the effect of the motion picture on child health is of even greater concern to the medical professsion. Studies having as their objective the investigation of the influence of the motion picture on sleep in childhood revealed a surprising amount of motility or restlessness as a characteristic of normal sleep in childhood. Employing a sensitive apparatus called a hypnograph, capable of registering the duration and extent of every motion of a sleeping subject, the investigators established the fact that the sleep of a normal child under ideal conditions is far from quiet. In fact, it is made up of a "succession of quiet periods alternating with restless periods." Only one child in a hundred sleeps a full hour without moving. The average length of quiet periods is not quite eleven minutes. Fifteen per cent of the sleeping time of children is spent in bodily movements. By using the same instrument it was found that sleep is quietest during the first part of the night. From July to December—the time of greatest growth—the sleep of children is most disturbed by restlessness. The onset of ill-

ness is reflected in one or two antecedent nights of restlessness. When the same methods were applied to a number of children who had attended night motion picture performances, either increased restlessness in sleep or sounder sleep followed. Both were recognized as departures from the normal and were interpreted as fatigue phenomena. Boys showed an average increase of restlessness of 26 per cent, girls of 14 per cent.

Disturbed sleep was not the only physical effect noted. Screaming and hysteria were not uncommon following exciting pictures. By the use of a psychogalvanometer, an instrument designed to register directly the intensity of emotional reactions, children were demonstrated to become twice as excited as adults. For the average child the average picture was found to be a powerful emotional experience. Acceleration of the pulse from 80 to between 120 and 140 was common. In one case the pulse was quickened to 192. The child's realistic attitude to the so-called horror and fright pictures, his inability to make the "adult discount," are responsible for many deep and lingering impressions.

The solution of the problem appears to rest with municipal legislation which will admit children only to selected pictures and require younger children to be accompanied by adults.

# President's Message

**Committees—A Necessity.**

There being but one official meeting of the House of Delegates, which is held at the annual meeting of the Medical Society (at which meeting the House adopts the reports, or refuses to do so), it is necessary that much of the work of the Society be carried on by the committees between the meetings.

The Council meets in January, or early February, to assume the responsibility for any urgent business which may have developed between the meetings.

This outline of the method whereby the Society carries on is given for the benefit of members as a whole, and especially for the new members of committees.

Announcement of the Standing Committees was made at the meeting in Lynchburg.

To the Chairmen of the Committees will be referred all matters coming within their jurisdiction, and it will be the pleasure of the President and the Secretary of the Society to aid these committees in every way possible.

R. D. Bates, M. D.
*President.*

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Dr. Bates has recently appointed the following Special Committees:

Walter Reed Commission—*Chairman*, Dr. C. P. Jones, Dr. J. D. Clements, Dr. J. W. Hunter.

Maternal Welfare—*Chairman*, Dr. Greer Baughman, Dr. P. W. Miles, Dr. T. J. Wlliams, Dr. Hawes Campbell, Sr., Dr. M. P. Rucker, Dr. C. J. Andrews.

Child Welfare—*Chairman*, Dr. W. P. Jackson, Dr. L. T. Royster, Dr. F. D. Wlison, Dr. T. D. Jones, Dr. C. E. Conrad.

Anesthetists and Laboratory Technician—*Chairman*, Dr. I. H. Goldman, Dr. L. C. Pusch, Dr. W. E. Bray, Dr. G. B. Setzler, Dr. S. W. Budd.

Department of Clinical Education—*Charmain*, Dr. F. H. Smith; *Executive Secretary*, Mr. George W. Eutsler, Dr. W. F. Draper, Dr. H. S. Daniel, Dr. R. A. Moore, Dr. Manfred Call, Dr. L. T. Royster.

Group Societies—*Chairman*, Dr. Southgate Leigh, Dr. J. M. Holloway, Dr. D. M. Kipps, Dr. E. L. Kendig.

Public Relations—State and County—*Chairman*, Dr. I. C. Harrison, Dr. A. F. Robertson, Jr., Dr. J. Shelton Horsley, Dr. J. A. Gibson, Dr. Thomas K. McKee, Dr. W. B. Martin.

Military Affairs and National Defense—*Chairman*, Dr. H. F. White, Dr. Nelson Mercer, Dr. J. W. Robertson.

Tuberculosis Clinics—*Chairman*, Dr. Dean B. Cole, Dr. H. A. Latane, Dr. E. C. Cobb, Dr. C. L. Harrell, Dr. W. E. Brown.

Mental Hygiene—*Chairman*, Dr. F. H. Redwood, Dr. G. W. Brown, Dr. James P. King, Dr. D. C. Wilson.

To Make Inquiry as to the Effect of Using Iodized Salt—*Chairman*, Dr. W. H. Higgins, Dr. N. G. Wilson, Dr. H. B. Mulholland.

To Investigate Irregular Practices at Certain State Hospitals—*Chairman*, Dr. J. Bolling Jones, Dr. W. B. Martin, Dr. P. W. Boyd, Dr. J. E. K. Flannagan, Dr. J. M. Gouldin.

To Administer Trust Fund for Post-Graduate Education—Dr. J. W. Preston, Dr. J. B. Jones, Dr. J. A. Hodges, Dr. I. C. Harrison, Dr. J. C. Flippin.

Advisory Board to Woman's Auxiliary—*Chairman*, Dr. J. Allison Hidges, Dr. Southgate Leigh, Dr. L. E. Sutton.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Dr. Lapham Begins Class in Clifton Forge.**

The third short course of two weeks' duration, thirty-ninth in his series of post-graduate courses in prenatal and postnatal care, was begun by Dr. M. E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, in Clifton Forge on December 11th in the C. and O. Hospital. Arrangements for the course were completed by the Secretary of the Alleghany-Bath County Society, Dr. R. P. Hawkins, Jr.

The first enrolled members for two meetings of the course were Drs. R. L. Claterbaugh, W. J. Ellis, L. A. Houff, B. R. Hudnall, N. B. Jeter, B. B. McCutchan, W. H. F. Miller, W. M. Revercomb, B. H. Tatum, A. D. Tyree and R. A. Warren. Other physicians attending included Drs. Cassagrande, Hawkins, J. V. Jordan.

**Completion of the Seventh Circuit.**

The circuit of classes in Danville and vicinity completed by Dr. Lapham in December made an attendance record second only to that of the Wise County circuit in the spring. The rate of attendance at Martinsville, 86.7 per cent, is the highest yet achieved by so large a group and next to the highest of all the thirty-eight groups. Itemized data for attendance upon the meetings in this circuit follow:

| | Members | | Visitors | | Attendance | |
|---|---|---|---|---|---|---|
| | No. | Pres. | No. | Pres. | Average | Per Cent |
| Martinsville | 15 | 130 | 13 | 59 | 18.9 | 86.7 |
| Chatham | 5 | 37 | 4 | 6 | 4.3 | 74.0 |
| Danville | 17 | 130 | 3 | 9 | 13.9 | 76.5 |
| Danville (Col.) | 5 | 43 | 1 | 1 | 4.4 | 86.0 |
| South Boston | 10 | 86 | 3 | 5 | 9.1 | 86.0 |
| | 52 | 426 | 24 | 80 | 50.6 | 81.9 |

In addition to attendance the Joint Committee has one other tangible testimony in regard to its courses—the written comment made by members of the classes. For the seventh circuit all twenty-one of the physicians replying considered the lectures excellent or good, and fourteen of eighteen rated the clinics also as excellent or good. Without exception they voted the course worth the expense in time and money and, with one exception, indicated their interest in future similar courses. The subject preferred, as in previous similar votes, was pediatrics with a vote of thirteen; a scattering choice was expressed for nervous and mental diseases, endocrinology, heart diseases, laboratory diagnosis and orthopedics.

For thirty-eight completed classes the score to date in the comment of members is as follows: 245 of 251 thought the lectures excellent or good; 120 of 216 gave the same rating to the clinics; 234 of 240 said the course was worth the cost; and 227 of 236 are interested in similar courses if they are offered in the future.

**Eighth Circuit in January.**

In the week of January 15th the intensive courses in prenatal and postnatal care are scheduled to begin on the Peninsula. In each of the five tentatively selected centers committees or enrolled members of the classes are actively engaged in completing the organization. The status of the preparations a month in advance of the first meetings is as follows:

In Richmond on Mondays, beginning January 15th, a course is to be offered to a group of local Negro physicians who had expressed their interest in the work and who wished to have the same advantage offered the physicians of their race in Petersburg, Norfolk and Danville. A representative group called together by Dr. Fred D. Brown, President of the Richmond Medical Society, discussed the plan at a meeting on December 7th which was attended by Dr. Lapham. Their intention is to report upon this opportunity to the other members of the Society and to form one of the classes.

The Mid-Tidewater Medical Society, having selected Richmond as the place of meeting, will begin its work there on Tuesday, January 16th, at 2:30 P. M. Dr. M. H. Harris, Secretary of the Society, reports thirteen members who have indicated their intention of attending the course, and expects that the total enrollment will be between fifteen and twenty members.

The James City-New Kent Medical Society at its meeting on December 7th approved the organization of a course to be held in Bell Hospital in Williamsburg beginning Wednesday, January 17th. Five members present enrolled as follows: Drs. B. I. Bell, J. R. Tucker,

A. M. Sneed, H. E. Davis and J. R. Parker. At least two additional members of the Society are expected to join the class and, because the Williamsburg center is most accessible, several other members are expected from the Mid-Tidewater Society.

The committee appointed by the Warwick County Medical Society to take charge of the conduct of the course in Newport News consists of Drs. W. R. Payne, J. W. Sayre and B. E. Hunt. At the meeting of the Society on November 27th five advance enrollments were secured, those of Drs. E. D. Blechman, T. C. Lawford, J. E. Marable, W. R. Payne and J. W. Sayre. It is anticipated that meetings will be held on Thursdays though the time and place have not yet been determined.

The Elizabeth City County Medical Society, called in special meeting on December 8th by the Secretary, Dr. W. P. Smith, voted approval for the formation of a group. Six advance enrollments and other tentative memberships were secured. The meetings on Fridays, beginning January 19th, are scheduled to coincide with the new prenatal clinic which is just being begun at Dixie Hospital.

**Preparations Under Way for the Ninth Circuit.**

The President of the Medical Society of Northern Virginia, Dr. E. C. Stuart, at its meeting in Front Royal on November 20th, appointed a committee to put into effect the Society's endorsement of the Joint Committee's plan for courses in its territory. Members of the committee, representing each of the counties included in the Society and empowered by the President to select additional committeemen if desired, are as follows: For Warren County—Dr. D. M. Kipps; Frederick County—Dr. B. B. Dutton; Page County—Dr. G. H. Long; Clarke County—Dr. C. O. Dearmont; Rappahannock County—Dr. J. G. Brown; Shenandoah County—Dr. C. H. Spiggle. The tentative plan for this circuit, beginning in March, is for Dr. Lapham to spend Mondays in Harrisonburg, Tuesdays in Luray, Wednesdays in Front Royal, Thursdays in Woodstock and Fridays in Winchester.

Through the effective activity of Dr. Kipps, advance enrollments have been secured sufficient to establish the Front Royal group. These enrollments include Drs. C. H. Armentrout, E. W. Brown, O. W. Carper, Meyer Cohen, E. L. Grubbs, L. F. Hansbrough and D. M. Kipps.

Geo. W. Eutsler, *Secretary*,
*Joint Committee on Prenatal and Postnatal Instruction.*

# Proceedings of Societies

**Lynchburg Academy of Medicine.**

At the meeting of this society held on December 4th, the following officers for 1934 were elected: President, Dr. R. D. Caldwell; vice-president, Dr. W. Clyde Adkerson; and secretary-treasurer, Dr. John Hundley, Jr. (re-elected). All are of Lynchburg. Dr. Harvey C. Brownley, Lynchburg, was elected to membership at this time.

Case reports were presented by Drs. Elisha Barksdale and Sam Wilson.

**The Fairfax County Medical Society**

Held its quarterly meeting at the Racquet Club, Washington, D. C., on November 2nd, at 11:00 A. M., with Dr. George B. Trible of that city as host. The program included papers on "Some Diagnostic Features of Scarlet Fever" by Dr. H. C. Macatee, and "Urticaria: A Case Report" by Dr. B. F. Phillips. About twenty-five attended this meeting and enjoyed the hospitality of Dr. Trible. Dr. Francis Blois, of Lorton, Va., was elected to membership.

Dr. Sigmund Newman, Vienna, is president, and Dr. A. L. Carson, Fairfax, secretary of this Society.

**The Warwick County Medical Society,**

At its regular meeting on December 18th, elected the following officers for the ensuing year: President, Dr. F. W. Poindexter; vice-president, Dr. G. G. Hankins; secretary-treasurer, Dr. B. L. Carleton. All these officers are of Newport News. This Society holds its meetings on the first and third Mondays.

**Richmond Academy of Medicine.**

The Academy, at its first meeting in December, elected Dr. Joseph F. Geisinger as presi-

dent for 1934, with Drs. F. P. Fletcher and A. I. Dodson, as vice-presidents. Dr. T. D. Jones is acting secretary. Papers by Dr. M. Pierce Rucker and Dr. Dodson were read during the scientific sessions. Following the meeting, refreshments were served in the dining room of the Academy.

**Petersburg (Va.) Medical Faculty.**

At the annual business meeting of the Petersburg Medical Faculty, held in December, the following officers were elected: President, Dr. William B. McIlwaine; vice-presidents, Dr. C. S. Dodd and Dr. Leta J. White; and secretary-treasurer, Dr. W. M. Bowman (re-elected).

**The Southside Virginia Medical Association**

Held their regular quarterly meeting in Petersburg, December 12th, under the presidency of Dr. D. C. Mays, Church Road. There was an attendance of over fifty physicians. A talk by Dr. Sydney S. Negus, Richmond, was the feature of the evening. Other papers were given by Drs. Meade Edmunds and George H. Reese, of Petersburg, and Drs. G. A. C. Jennings, Wm. H. Higgins, and O. L. Hite, of Richmond.

The following officers were elected: President, Dr. Herbert C. Jones, Petersburg; vice-presidents, Dr. S. E. Gunn, Hopewell; Dr. John A. Proffitt, Burkeville; Dr. M. H. Todd, Norfolk; and Dr. C. V. Montgomery, South Hill; and secretary-treasurer, Dr. R. L. Raiford, Franklin. Drs. E. L. Kendig, Victoria, J. E. Rawls, Suffolk, and C. S. Dodd, Petersburg, were elected to the executive committee.

# News Notes

**Greetings and Best Wishes for a Happy and Prosperous New Year to all Our Readers**

**The Seaboard Medical Association of Virginia and North Carolina**

Held its annual meeting in Norfolk, Va., December 5th, 6th and 7th, under the presidency of Dr. Walter B. Martin of that city. In our last issue we inadvertently relegated this office to Dr. W. P. McDowell who, as president of the Norfolk County Medical Society, called the meeting to order. An unusually fine program was presented, among the high spots being a symposium on the heart by prominent Virginia and North Carolina doctors. Dr. Walter E. Dandy, of Johns Hopkins Hospital, Baltimore, lectured on cranial nerve pain, and Dr. Louis V. Hamman, also of Johns Hopkins Hospital, conducted a very instructive heart clinic. The attendance was large and the sessions well worthwhile. The social features included luncheon at Monticello Hotel on Wednesday and an oyster roast after the closing session by the local doctors and an informal reception and supper by the president. Dr. W. B. Martin, on the second evening.

The next meeting is to be held in Kinston, N. C., December 4-6, 1934. Officers elected for the ensuing year are: President, Dr. Paul F. Whitaker, Kinston, N. C.; vice-presidents, Dr. C. J. Andrews, Norfolk, Dr. H. W. Carter, Washington, N. C., Dr. C. J. Riddick, Suffolk, and Dr. John Cotten Tayloe, Washington, N. C.; treasurer, Dr. A. M. Burfoot, Fentress; and secretary, Dr. Clarence Porter Jones, Newport News. Both of the last named officers have held these positions for a number of years.

**Women Physicians of the Southern Medical Association.**

The twentieth annual meeting of the Women Physicians of the Southern Medical Association was held in Richmond, November 15th, during the convention of the Southern Medical Association. Thirty women from eleven states, and two from the District of Columbia, attended. Dr. Ray K. Daily, Chairman, Houston, Texas, presided at the meeting, which was followed by the usual annual banquet.

Dr. Emily Gardner, Richmond, gave the address of welcome, and the response was given by Dr. Kate Savage Zerfoss, Nashville, Tenn.

Among the prominent Southern women who addressed the assembly were Dr. Elizabeth Bass, New Orleans, Dr. L. Rosa H. Gantt, Spartanburg, S. C., Dr. Louise Ingersoll, Ashe-

ville, N. C., and Dr. Margaret Mary Nicholson, Washington, D. C.

Officers elected for the coming year include: Dr. Pauline Williams, Chairman, Richmond, Va., Dr. Margaret Mary Nicholson, Vice-Chairman, Washington, D. C., and Dr. Sylvia Allen, Secretary, Charlotte, N. C.

Among the social affairs enjoyed by the Women Physicians was a seated dinner given by Dr. Emily Runyon, Richmond. Dr. Margaret Kuyk was hostess to the group at an afternoon tea in her home, Bellevue Park, this city.

**Married.**

Dr. William Ambrose McGee and Miss Lois Imogene Lacy, both of Richmond, Va., December 9th.

Dr. John Randolph Perdue, Jr., Rocky Mount, Va., and Miss Jean Barksdale Jones, daughter of Dr. and Mrs. J. Bolling Jones, of Petersburg, Va., December 2nd. They will make their home in Miami, Fla. Both Dr. and Mrs. Perdue were members of the class of '32, University of Virginia, Department of Medicine.

Dr. O. Noel Morison, class of '28, University of Virginia, Department of Medicine, and Mrs. Ruth Bryant Reid, of Southern Pines, N. C., formerly of Roanoke, Va., October 12th, in Roanoke, Va. Dr. and Mrs. Morison are making their home at Essex County Hospital, Cedar Grove, N. J., where he is a member of the staff of that hospital.

Dr. Claude H. Fryar, Oak Ridge, N. C., and Miss Lucie Sutton Hayes, Palmer Springs, Va., November 25th. Dr. Fryar is an alumnus of the Medical College of Virginia, class of '18.

**News Notes From Medical College of Virginia.**

Founders' Day of the ninety-sixth session was observed Tuesday, December 5th, at Monumental Episcopal Church. Doctor Douglas S. Freeman, Editor, *The Richmond News Leader*, the speaker for this occasion, emphasized in his talk the history of the college, the splendid work done in the past, and the even greater work which it could do in the new century. The college will celebrate its centennial year in the spring of 1937-38.

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Dr. Ernest Little, dean of the school of pharmacy, Rutgers University, lectured to the pharmacy students on November 23rd.

Dr. Harry Bear, dean of the school of dentistry, attended the annual meeting of the First and Second District Dental Societies, of Virginia, during the early part of December.

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The regular scientific monthly meeting of the staff was held Thursday, December 14th. The program was as follows:

Pregnancy after Paralysis: Report of Three Cases, by Dr. H. H. Ware. Discussion opened by Dr. C. C. Coleman.

Some Remarks Concerning Dr. Thomas Hunt Morgan, Recent Nobel Prize Winner, by Dr. H. L. Osterud.

Dr. Kinloch Nelson and Dr. J. A. Shield presented a very interesting case report.

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Members of the faculty taking part in the quarterly session of the Southside Medical Association were Dr. G. A. C. Jennings, Dr. William H. Higgins, and Dr. Oscar L. Hite. Dr. Sidney S. Negus was the speaker at the dinner given on this occasion Dr. Negus talked on the New Food and Drugs Act.

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Report of the outpatient department for the month of November shows 5,667 patient visits. The work of this department continues to grow, this being 585 more patients than for the same month last year.

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Dean Wortley F. Rudd and Dr. W. G. Crockett, of the school of pharmacy, attended the National Drug Trade Conference in Washington, D. C., December 5th.

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During the sessions of the recent Southern Medical Association convention about one hundred alumni visited the college.

**News From University of Virginia, Department of Medicine.**

Dr. Frederick A. Coller, Professor of Surgery at the University of Michigan, and Dr. V. Pardo Costello, Professor of Dermatology and Syphilology at the University of Havana, visited the Medical School on November 13th and 14th.

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On December 12th, Dr. R. V. Funsten spoke on Fractures about the Shoulder and Hip, before the Rockingham County Medical Society in Harrisonburg.

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On December 12th, Dr. D. C. Wilson spoke before the Danville Medical Society on the

subject of The Histogenesis and Diagnosis of Brain Tumor.

**News Notes From Duke University School of Medicine and Duke Hospital.**

On December 2nd, Dr. J. Shelton Horsley, of Richmond, Va., gave a clinic at the Duke Hospital on Lesions of the Stomach and Colon.

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On December 7th, Dr. E. L. Eliason, of Philadelphia, Pa., gave a clinic on Fractures.

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On December 8th, Dr. Charles W. Stiles, of the United States Public Health Service, lectured on Hookworm.

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On December 13th, Dr. Estella Ford Warner, of the United States Public Health Service, lectured on Child Hygiene.

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The following seniors were elected to Alpha Omega Alpha: Mrs. Eleanor B. Easley, Mr. Jay L. Hutchison and Mr. Talmage L. Peele.

**Dr. J. E. Hamner,**

An alumnus of the Medical College of Virginia, class of '16, but recently of Rainelle, W. Va., is at Memorial Hospital, Richmond, Va. where he is taking a residency in ear, nose and throat until July 1, 1934.

**The Association of Surgeons of the C. & O. Railway**

Recently held its annual meeting at White Sulphur Springs, W. Va., under the presidency of Dr. W. F. Martin, of Ironton, Ohio. Officers elected at this meeting are: President, Dr. Stuart McGuire, Richmond; vice-president, Dr. J. M. Emmett, Clifton Forge; and secretary, Mr. G. E. Meanley, Richmond (re-elected).

**"Medicine in Virginia in the Nineteenth Century."**

The third and last of a series of histories of medicine in Virginia, has just been published by Garrett and Massie, of Richmond. People everywhere, interested in medical history, should welcome the advent of this volume. Dr. Wyndham B. Blanton, as chairman of the Medical Society of Virginia's Committee on History of Medicine in Virginia, has done an outstanding work in this field and has rendered a service for which the Society is most grateful.

**Dr. Ross V. Patterson,**

Dean of the Jefferson Medical College of Philadelphia, was elected president and chairman of the Executive Council of the Association of American Medical Colleges at its annual meeting held in Rochester-Minneapolis, Minn., October 29th-November 1st.

**Dr. and Mrs. Charles A. Young,**

Roanoke, Va., sailed from New York on December 23rd, on the *Mauretania*, for a West Indies Cruise. They will visit Trinidad, LaGuayra, Venezuela, Curacao, Panama Canal, and Havana, and will return to Roanoke on January 7th.

**Officers of N. C. State Board of Health.**

Dr. Carl V. Reynolds, Asheville, has been elected president of the North Carolina State Board of Health, Dr. Sylvester D. Craig, Winston-Salem, vice-president, and Dr. James M. Parrott, Raleigh, remains secretary.

**Southern Surgical Association.**

The annual meeting of this Association was held at Hot Springs, Va., the middle of December, with Dr. Vilray P. Blair, of St. Louis, presiding. This was said to be one of the best meetings held by the association and there was an attendance of 143 members, 53 ladies, and 47 guests. Fourteen new members were admitted.

Officers elected are: Dr. Frank K. Boland, Atlanta, president; Dr. J. H. Neff, University, Va., and Dr. E. P. Hogan, Birmingham, vice-presidents; and Dr. R. L. Payne, Norfolk, secretary-treasurer (re-elected).

The Cloister at Sea Island, Ga., was selected as the 1934 meeting place, and Dr. Perrin Nicolson, Atlanta, Ga., is chairman of the committee of arrangements.

**New Books Available to Members.**

The Library, Medical College of Virginia, Richmond, announces that the following are the latest additions to their library. They will be loaned to members of our Society, the only cost being return postage.

Amer. Pub. Health Assn.—What to Tell the Public About Health.
Ashurst, A. P. C.—Surgery, Its Principles and Practice.
Barclay, A. E.—Digestive Tract.
Barker, M. L.—Basic German for Science Students.
Batty, R. J.—Enuresis or Bed-wetting.
Chapin & Royster—Pediatrics (7th ed.)
Clay & Court—The History of the Microscope.
Clendening, Logan—Behind the Doctor.

Defendall, P. H.—Actual Business English.
Durham & Woods—Alcohol and Inheritance.
Ellis, Havelock—Psychology of Sex.
Ely—Outlines of Economics.
Fishbein, Morris—Fads and Quackery in Healing.
Fishbein, Morris—Frontiers of Medicine.
Fowler, H. W.—Dictionary of Modern English Usage.
Gabriel, W. B.—The Principles and Practice of Rectal Surgery.
Gills, W. A.—The Crew or the Crusier.
Graham, Stanley—Acidosis and Alkalosis.
Hambidge, Gove—Time to Live.
Harrison, G. B., ed.—Present Remedies Against the Plague, etc.
Hill, A. V.—Chemical Wave Transmission in Nerve.
Holt and Howland—Diseases of Infancy and Childhood.
James, R. H.—Studies in the History of Ophthalmology in England.
Kamble, James—Idols and Invalids.
Le Comte, R. M.—Manual of Urology.
Lenard, P.—Great Men of Science.
McCollum & Becker—Food, Nutrition and Health.
Mayo Foundation Lectures on the History of Medicine.
Medical Research Council—Special Report Ser. 155. Gilks & Orr—Physique and Health of Two African Tribes.
Medical Research Council—Special Report Ser. No. 178. Gray, John—A Study of Nephritis and Allied Lesions.
Medical Research Council—Special Report Ser. No. 179. Chronic Enteric Carriers and Their Treatment.
Medical Research Council—Special Report Ser. No. 181—Reports of the Com. Upon the Physiology of Vision.
Medical Research Council—Special Report Ser. No. 182—Tuberculous Bacillaemia.
Medical Research Council—Special Report Ser. No. 183—Reports on Biological Standards. III. Methods of Biological Assay Depending on a Quantal Response.
Mendel, L. B.—The Vitamins.
Miner, L. M. S.—The New Dentistry.
Moody, W. V., and Lovett, R. M.—History of English Literature.
Moulton—Financial Organization of Society.
Murchison, Carl, ed.—Handbook of Child Psychology.
N. Y. Academy of Medicine—Maternal mortality in New York City.
N. Y. Academy of Medicine—Outline of Preventive Medicine.
Newsholme & Kingsbury—Red Medicine: The Health of the People in Soviet Russia.

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# Obituary Record

**Dr. Zeb Vance Sherrill,**

Well-known physician of Marion, Va., died December 11th, in a Richmond Hospital. He was a native of North Carolina and seventy-one years of age. Dr. Sherrill attended the Medical College of Virginia and graduated from the University of Louisville, School of Medicine, Ky., in 1888. He was a member of the Smyth County Board of Health and served as president of the Marion Kiwanis Club, and was formerly a member of the Staff of Southwestern State Hospital. Dr. Sherrill had been a member of the Medical Society of Virginia for forty-three years. His wife, Dr. Caroline Sherrill, survives him.

**Dr. Leon O. Vaughan,**

Prominent physician of Waverly, Va., died November 26th, following a heart attack. He was fifty-seven years of age and a graduate of the Medical College of Virginia, class of 1904. Dr. Vaughan was very active in the civic life of Waverly and was past master of the Masonic Lodge and a member of the Rotary Club. He had been a member of the Medical Society of Virginia for twenty-six years. His wife and a daughter survive him.

**Dr. Rolfe Eldridge Hughes,**

Prominent physician of Laurens, S. C., died suddenly December 2nd. He was a native of Fluvanna County, Va., and was sixty-five years of age. Dr. Hughes graduated from the University of Maryland, School of Medicine, in 1892. He was a former president of the Tri-State Medical Society of Virginia and the Carolinas and for a long time served as secretary of that organization.

**Col. George Pullen Peed,**

M. C., U. S. Army, an alumnus of the University of Virginia, Department of Medicine, class of '95, died at Fort Slocum, N. Y., October 20th, death being due to heart disease. Col. Peed was a veteran of the Spanish-American and World Wars, and had been in the Service since July, 1903.

**Dr. Thomas Marshall Sloan,**

Newton, N. C., died November 12th, as a result of injuries received in an automobile accident. He was thirty years of age and a graduate of the Medical College of Virginia in 1929.

**Dr. Stanley White Barber,**

Gaithersburg, Md., died November 19th. He was fifty-five years of age and graduated from the Medical College of Virginia in 1913.

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# Virginia Medical Monthly

OFFICIAL PUBLICATION OF THE MEDICAL SOCIETY OF VIRGINIA

Sixty-Fifth Annual Meeting, Medical Society of Virginia, Alexandria, Fall 1934

Vol. 60, No. 11.
WHOLE No. 980.

RICHMOND, VA., FEBRUARY, 1934

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RICHMOND, VA., FEBRUARY, 1934

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## OBSERVATIONS ON HYPERTHYROIDISM WITH FSPECIAL REFERENCE TO SPONTANEOUS RECOVERY.

J. MORRISON HUTCHESON, M. D., Richmond, Va.

Since the time of Parry, Graves and Von Basedow a vast literature has accumulated concerning disorders of the thryroid. New theories of causation have been advanced, classifications innumerable have been devised; nomenclature has flourished; many methods of treatment have been advocated; old ideas have been forgotten and rediscovered. Yet, amazingly little has been added to the conception of these early writers as to the fundamental nature of the syndrome with which their names are connected. Basal metabolism studies as an aid to diagnosis, improved technique in surgical treatment and useful symptomatic remedies have been developed, but, so far as scientific grasp of the situation with which he is dealing is concerned, the physician of today stands on about the same footing as his predecessors of half a century or more ago. The etiology of hyperthyroidism or toxic goiter or thyrotoxicosis is still an unsolved problem.

Therapy in hyperthyroidism has been wholly empirical. Calcium-free water, drugs, vaccines, sera, glandular products, local applications, injections and surgical removal or reduction of the blood supply have all had advocates, and cures seem to have followed each of the measures employed. It is a medical axiom that where a number of remedies are advised for a disease, the probability is that no one of them is curative. The history of medicine also indicates that a therapeutic procedure long in doubt generally proves to be of little value. On these grounds, therefore, one may very properly entertain serious doubts as to the virtues that have been claimed for the various cures used in hyperthyroidism.

As a matter of fact, it has long been recognized, though not sufficiently emphasized, that patients with Graves' disease recover with or without treatment. Niemeyer,[1] in his textbook published in 1870, says that the "majority recover," and casts some doubt upon the supposed effect of the remedies employed. Hilton Fagge,[2] writing in 1886, refers to his experience with the disease at Guy's Hospital since 1868 and comments on the rarity of a fatal termination. He concludes that most cases end in recovery. Osler calls attention to the rapid disappearance of symptoms in certain cases and says that probably 65 per cent of all cases make a good recovery.

Of the numerous contributions during the past quarter of a century, dealing with the course and termination of hyperthyroidism, most have been devoted either directly or indirectly to popularizing some method of treatment, with the implication, at least, that whatever improvement occurs is due to the treatment, without which the patients would have remained ill or died. In some large clinics X-ray is used with excellent results, while elsewhere rest, dietary measures and drugs produce equally prompt and satisfactory cures. By others, surgery of some kind is represented as being the only treatment worth considering; thyroidectomy is advocated in all cases, and when this fails a surgical attack upon the suprarenals has been devised. No satisfactory reason for thyroidectomy has been arrived at save that the majority of its subjects survive and recover, nor has the examination of many thousand glands removed contributed in great measure to an understanding of the condition for which removal is done. Surgical treatment, therefore, however useful, must still be regarded as an empirical procedure.

On the other hand, Kessel, Hyman and Lande[3] in 1923 reported a study of the natural course of the disease in fifty consecutive cases of exophthalmic goiter who were given no specific treatment at all. The mortality rate was 4 per cent and the number cured and improved compared favorably with the best results achieved by any other method of management. Read,[4] with a view of determining the duration of toxicity in exophthalmic goiter as measured by metabolism studies, collected

from the literature and from his own practice the data on 189 cases, followed for from three to twenty-five months. Forty-eight of these had been treated surgically, eighty-six by X-ray and fifty-five had received no specific treatment. The course of the toxic period, according to the average metabolic rate, was almost identical in the three groups. He believes that the duration depends to some extent on the severity which may be measured roughly by the height of the metabolic rate at the first crisis, and states that it varies from six months to three years, the average being from fifteen to eighteen months. Barker[5] in 1924 wrote as follows: "The average duration of hyperthyroidism, associated with diffuse hyperplasia of the whole thyroid gland, is probably two or three years, no matter how you treat it (medically, surgically or radiologically). You may, it is true, compel a subsidence of the symptoms by treatment but rarely a cure until this time has elapsed."

Most of the patients with hyperthyroidism that I have seen have been treated surgically and, so far as I can judge, with at least average results. A minority, however, who for some reason escaped operation and who could be followed over a sufficient period of time, made such satisfactory recovery as to convince me that routine surgical treatment is unwise and to stimulate further reflection as to the best method of management in the individual case. It is almost by chance that one sees for any length of time a well developed toxic goiter unoperated, as even laymen, as well as many physicians, have the belief that the disease comes out with the gland in much the same way as an inflamed appendix is removed and that to leave it in is highly dangerous. The cases referred to all had goiter, tachycardia, over-action of the heart, tremor, rapid loss of weight and increased metabolic rate. They were followed until all symptoms and signs except goiter had disappeared and for a sufficient time after treatment had been discontinued to justify the belief that they had recovered. A typical example is the following:

A young woman of twenty was seen September 17, 1926, complaining of nervousness, breathlessness and loss of weight. Her symptoms had increased gradually during the summer and for two weeks she had been troubled with head cold and cough. She had been examined previously at another clinic, and operation had been advised but declined. Examination showed all the essential features of Graves' disease, including slight eye changes, and a basal metabolic rate of plus 38.6. She was kept under observation in the hospital eighteen days, during which time she gained seven pounds in weight and became symptom-free. Treatment consisted of rest, Lugol's solution, sedatives and local measures for a mild ethmoiditis. She then returned to college in the North with the advice that she remain under medical supervision and continue taking iodine, which she did for about six months. Several letters were received from her during the following winter, chafing at the rather moderate restrictions advised, and from her physician, reporting her condition as satisfactory. She made up her work, in an institution whose requirements are rigid, and graduated at the end of the session. She was not seen again until August, 1928, at which time she had been married four months, was entirely free from symptoms and somewhat above normal weight. A letter received from her recently, in reply to an inquiry, states that, except for a brief period of nervousness following the birth of a child in June, 1929, she has been well and maintains a weight level slightly above standard.

I have records of a number of similar cases in young people, but in only five, four women and one man, has it been possible to ascertain beyond doubt that recovery has been complete. In addition to diet and iodine, with sedatives as indicated, two patients were kept in bed two and three weeks, respectively, and two were ambulatory, making little or no change in their manner of living. One patient, a school teacher, lost no time from work. She took iodine intermittently for almost two years, noting that when she left it off her weight would decrease. She now weighs twenty-seven pounds more than when treatment was begun in November, 1930, and has gained slightly since iodine was finally discontinued in September, 1932.

The diagnosis of toxic adenoma, spoken of by one writer[6] as a "bit of fancy that has got into the literature," is one that I have made with considerable hesitation. If it is true that such cases do not recover without removal of the thyroid, then I have made a number of wrong diagnoses, as five of my patients with nodular goiters and toxic manifestations are

apparently well. A married woman of fifty, examined April 27, 1927, complained of nervousness, palpitation and loss of twenty-six pounds in weight. Her periods were irregular and there had been excessive vaginal bleeding. Examination showed a small, irregular, rather hard thyroid, pulse rate 130, marked cardiac over-activity and pronounced tremor. The haemoglobin was 45 per cent, red cells, 2,880,000. Basal metabolic rate was plus 38 per cent. Consultation was secured with a surgical colleague, who found what appeared to be a fibroid tumor of considerable size, and operation was tentatively planned for both the pelvic and thyroid conditions. As a palliative measure radium was given to control bleeding, which it did permanently, and the patient left the hospital after one night. Treatment, including Lugol's solution, was supervised at the office with rapid disappearance of symptoms. On August 1st the metabolic rate was plus 4 per cent and she had gained twelve pounds. Operation was discussed but declined and was not urged. After gaining twenty-one pounds in weight she discontinued iodine with the result that she lost eight pounds and the basal metabolic rate rose to plus 24.2 per cent. Subsequently she took the solution poorly as she was entirely free from symptoms and did not wish to gain weight. No metabolism test has been made in the past two years but she maintains her weight and is free from toxic signs.

Of the other four patients with nodular goiters and hyperthyroidism, three were in women past fifty with hypertension and cardiac failure, while the fourth, a woman of thirty-eight, had mitral disease with mild decompensation. On treatment with iodine, toxic manifestations disappeared rapidly in all cases. A small dose, eight drops, of Lugol's solution daily was given more or less constantly for about two years and then discontinued without a return of symptoms. I have seen apparently excellent results follow thyroidectomy in this type of patient and have the distinct impression that it is a useful measure. However, I am equally sure that a certain number do as well, if not better, without it; for when the cardiac over-activity is controlled, by whatever means, the danger of heart failure, so far as the thyroid is concerned, ceases.

These cases, ten in number, all belong to the type for which thyroidectomy is usually advised and even urged as essential to recovery. They illustrate the important fact that some patients with definite hyperthyroidism of average degree do recover without operation and with considerably less inconvenience and loss of time than if operation had been done. Moreover, they provide a basis for speculation as to the nature of recovery and suggest that greater effort be made to select those cases in which the disease will subside quickly and easily if allowed to do so.

Though comparatively new to the present generation of physicians, iodine is an old remedy in thyroid disease. In some form it has probably been used for centuries as a treatment for goiter in general. Aitken[7] in 1872 spoke of it as "almost a specific" and recommended that it be given in the form of the compound tincture, known as Lugol's solution. Trousseau described its beneficial effects in cardiac irregularities associated with Graves' disease, though he did not regard it as curative. As methods of surgical approach improved, the hypothesis of hyperfunction was generally accepted, with its corollary surgical removal; interest in other methods of treatment waned and when iodine was discovered to be a natural constituent of the thyroid its use in treatment came to be regarded as positively harmful. For many years iodine was used by the regular profession only as a prophylactic in goitrous districts and occasionally as a test for Graves' disease, though it is said to have been a principal constituent of quack goiter cures. If a patient did not improve or got worse on the test administration, he was thought to have Graves' disease, which is just the reverse of the idea prevalent at present. It is true that Dock, in a work published in 1915, commented on the good effect of iodine both in relieving symptoms and reducing the goiter in certain cases of Graves' disease, and suggested further experimental use of the drug for the purpose of determining its action. In 1924 iodine was reintroduced, but this time it was advocated with the restrictions that its benefits are temporary, that its continued administration is harmful, that it is to be used only as an adjunct to operation and then in pure hyperthyroidism only, as its effect upon so-called toxic adenoma is dangerous. These restrictions applied only to unoperated cases, as iodine was found to be a most useful postoperative remedy and could then be given indefinitely. Considerable emphasis has been

given these supposed limitations upon iodine therapy, but there is little evidence in the work reported or elsewhere to indicate that they are valid.

The large majority of patients with the clinical manifestations of hyperthyroidism show marked improvement on iodine and many rapidly return to normal and remain so while the drug is continued. Corresponding changes in the gland tissue have also been observed, consisting of a return from hyperplasia to a colloid state. A few cases do not respond to iodine and occasionally one is seen to grow worse on its use. The explanation of such an event is not clear, but to conclude therefrom that iodine should never be administered over a long period is no more logical than to conclude that thyroidectomy should never be done because of the cases that do not improve or grow worse after operation. I have not observed any ill effect from Lugol's solution, though I have given it to a considerable number of patients continuously for years. In one of my patients who had remained toxic for two years after thyroidectomy the drug apparently lost its effect and X-ray treatment was followed by improvement. While iodine may not be regarded as a cure in the sense of terminating the disease, it is one of the most useful means at our disposal for controlling symptoms. In many instances improvement begins at once and in a few weeks all symptoms, including abnormal metabolism, disappear. This has been held to be the ideal point for surgery, which would be true if operative mortality were the only consideration involved. But the contention that operation shortens the course of the disease and prevents recurrence or does anything more than modify symptoms is still unproven. Consequently, it seems unjustifiable, in the light of what we know about thyroid disease, to subject a patient, whose symptoms have been controlled, to the discomfort, risk and expense of operation.

To attempt to classify a disease, the nature of which is unknown, as medical or surgical or roentgenological, is premature, while energetic justification of such attempts by specious theories is subversive of progress toward a clearer understanding of the disorder. With our present knowledge of hyperthyroidism, improvement in management seems possible through evaluation of the several empiric methods of treatment now in use and through individualization in applying them. If hyperthyroidism is a self-limited disease with a tendency to recovery in the majority of cases, the object of therapy is to control symptoms in the shortest possible time with a minimum of danger and of suffering.


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## TREATMENT OF ECLAMPSIA.


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The term eclampsia is so vague that it would hardly be possible to enter into an intelligent discussion of the treatment without first making clear a conception of its meaning. The word itself orginated from the Greek word meaning flashing out or sudden lighting up, and was first used to describe those cases of sudden convulsions and high fever occurring at or near the time of labor. Gradually its meaning has been extended to cover all cases of toxemia of pregnancy which would most probably terminate in convulsions if allowed to progress. The terms "pre-eclampsia" and "eclamptic state" have been used to differentiate two stages of this condition. For the purpose of this discussion, however, the term "eclampsia" will be used to include all those ill-defined toxemias of pregnancy and the puerperium which produce or tend to produce convulsions. There has been no effort to classify this apart from the nephritic toxemia of pregnancy, for the treatment of both conditions is the same. Since the thing to be desired above all else in any disease is it prevention, the treatment should begin with prophylaxis.

### Prophylaxis

Few diseases can be satisfactorily prevented without knowing the cause, but unfortunately the etiology of eclampsia is still obscure. Various theories have been offered but none entirely explain certain pathological and clinical facts of which the following may be men-

tioned: (1) The genesis of the characteristic hepatic lesions; (2) The predisposing influence of primiparity, multiple pregnancy and hydramnios; (3) That its incidence increases as pregnancy approaches term; (4) That true eclampsia rarely recurs, whereas chronic nephritis gives increasing trouble with each succeeding pregnancy; (5) That a milk diet, which is high in protein and mineral constituents, is as efficacious as one low in protein and free of salt.

Briefly, the only method now known for the prevention of eclamptic toxemia is careful and continuous pre-natal care. The mother's watch-word should be moderation in all things. Out-door exercise, wholesome food without over-eating, and physical and mental rest should be routine. Frequent examinations by the attending physician are important and should include weight, blood pressure and urinalysis. While this prophylactic treatment is not always successful, it aids in prevention, and also enables the physician to start treatment at the onset of toxemia.

### Treatment of Pre-Eclamptic State

This usually develops after the sixth month of pregnancy, and so many factors enter into the management at this stage that one is taxed to the utmost to know how to advise. The first rise of twenty points in blood pressure, appearance of edema, epigastric pain, increased nervousness, or persistent headache call for immediate restriction of diet and rest in bed. If symptoms subside within a week, the patient may be allowed to return gradually to her usual mode of living. Examinations from this point must be more frequent than in the usual case of pregnancy, at least once weekly. If symptoms do not subside at the end of one week, the age of the fetus, the general condition of the mother, her desire for children, her age, and the number she has already borne must be considered. If the fetus is six months old and the mother is very desirous of saving its life, some risk could be run in an attempt to carry it to the seventh month. Increasing signs of toxemia while the mother is under treatment is a bad prognostic sign, and emptying the uterus must not be too long delayed. If allowed to continue, permanent pathological changes may occur in the mother and the toxemia will be sufficient to kill the fetus, so nothing can possibly be gained by delay after it is demonstrated that the toxemia is not responding to treatment.

### Eclamptic State

With theories concerning etiology varying so widely, it is only natural that we should find methods of treatment recommended which vary from the ultraconservative to the extremely radical. It seems that almost everything from watchful waiting to decapsulation of the kidney and decompression of the brain has been tried. Some establish one method of treatment by which all their patients with eclampsia are treated. In spite of methods which are advocated to reduce mortality, we find that the death rate from eclampsia in Virginia was not lowered from 1920 to 1930.

The higher mortality attending cesarean section and accouchement force after the first convulsion has led to a general acceptance of the fact that such early intervention is useless or harmful. All now agree that convulsions must be controlled if possible. The methods of controlling the convulsions vary greatly in different clinics. Some use the Stroganoff treatment; some use magnesium sulphate intravenously; some use dextrose solution with large amounts of fluid; others use it concentrated. Some attempt to dehydrate the patient by limiting the fluid intake to the output. Some make an effort to start labor and others disregard pregnancy entirely. So, rather than enter into a lengthy discussion of the merits and demerits of the different lines of treatment, we will outline as clearly as possible the method we are now using with satisfactory results.

Following a general plan of conservatism, every effort is made to treat each case individually according to symptoms and to avoid routine orders as far as possible.

*First*, brain stimuli are to be prevented as far as possible. This means that bright lights, noise and prolonged or unnecessary treatments are contraindicated.

*Second.* If the blood pressure is high, we give 20 c.c. of 5 per cent magnesium sulphate intravenously on admission. We have failed to see the bad results claimed by some and have certainly seen almost miraculous results follow its use. This is repeated, if indicated.

*Third.* Nine grains of sodium amytal are given per rectum.

*Fourth.* Gastric lavage is done through a jutte tube inserted through the nostril and left

in place. If the sodium amytal is expelled from the rectum, six grains are given through the jutte tube.

*Fifth.* Fifty grams of dextrose solution are given intravenously. If the patient is markedly edematous and apparently water-logged, this is given in a 50 per cent solution; otherwise, a 5 or 10 per cent solution is used.

*Sixth.* If the patient has had more than two severe convulsions after treatment is instituted, a lumbar puncture is then done. Relief of intra-cranial pressure by this method will sometimes control repeated convulsions.

*Seventh.* Pregnancy is temporarily disregarded. After convulsions are definitely under control, a vaginal examination is made and the method of emptying the uterus decided upon. If the patient is at or near term and the cervix will admit one finger, a Voorhees' bag or rubber bougie with packing is introduced into the cervix without anesthesia. Labor is allowed to progress normally until the second stage. Pain here usually causes a tendency to a return of the convulsions, and, if this is the case, the patient is delivered under anesthesia with forceps or by version. If the convulsions have developed before term and the cervix is long and rigid, a cesarean section is considered.

*Eighth.* Continuation of treatment is necessary. Sedatives are given until the baby is delivered, and longer, as indicated. Sodium amytal, as a rule, gives the best results. If the patient does not respond to this drug, sodium luminal or nembutal is tried. Morphine can be used as needed with either drug. Intravenous use of magnesium sulphate is not continued, but this is given intramuscularly and by mouth. Treatment from this point is determined by remaining symptoms.

At the Lewis-Gale Clinic the general plan of treatment just outlined has been in use for about three years. Realizing that our results were now much more satisfactory than formerly, we decided to review our records for eclampsia during this period of time. Of course, only twenty cases is inadequate to draw any conclusions from a statistical point of view, but we hoped to contribute what little we could to a subject which seems to be so far from solution and the treatment of which is still a matter for so much debate.

In selecting cases for review none were used except those actually having convulsions or so severe and unresponsive to treatment that labor was induced. All cases of toxemia which responded to treatment and were allowed to go to term were excluded.

In reviewing Chart No. I, we see that there was one maternal death out of twenty cases; there were three still-births and two infants who died within three days. Eleven of these patients actually had convulsions and ten of these had one or more convulsions before admission to the hospital. Three were admitted with post-partum convulsions after delivery in the home, and one developed post-partum convulsions after delivery in the hospital.

As to the use of drugs, the chart shows we are not bound to any one drug for routine use. Nearly all cases had dextrose intravenously.

Chart No. I

| No. Cases | Maternal Deaths | Infant Deaths | | Patients Having Convulsions | Delivered at Term | Before Term |
|---|---|---|---|---|---|---|
| | | S. B. | Within 3 days | | | |
| 20 | 1 | 3 | 2 | 11 | 6 | 14 |

| Post-partum Convulsions | Mag. Sulphate | | Intrav. Dextrose Sol. | Sodium Amytal | Luminal | No Morphine |
|---|---|---|---|---|---|---|
| | Intrav. | Intramus. | | | | |
| 4 | 7 | 4 | 16 | 9 | 8 | 8 |

Chart No. II

| Average Blood Pressure | Patients Having Convulsions | | Average Age | Average Time In Hospital |
|---|---|---|---|---|
| | Before Adm. | Total Convul. | | |
| 170/110 | 5 | 10 | 26 | 16 days. |
| | 3 | 3 | | |
| | 13 | 14 | | Shortest 12 hours. |
| | 0 | 3 | | |
| | 3 | 3 | | |
| | 2 | 2 | | Longest 29 days. |
| | 1 | 1 | | |
| | 5 | 5 | | |
| | 3 | 4 | | |
| | 1 | 1 | | |
| | 3 | 3 | | |

One of the most striking observations to us was that eight had no morphine whatever, and only one had large doses as recommended by Stroganoff. This was given before admission to the patient who died, but we feel that this was rather a coincidence and not the cause of death.

As previously stated, the total number of cases is not sufficient to draw any conclusions from the information shown in Chart No. II, except that this is about an average group of eclampsia patients as seen in a general hospital. A brief review of a few individual cases may be of more interest than generalizations.

Case No. 1, Mrs. K., Para. 1, age 24. Admitted in a state of shock after having had at least five hard convulsions in the home. Never regained consciousness. Blood pressure 76/64. Intravenous dextrose and a blood transfusion gave no noticeable improvement. Convulsions became more frequent when the fetal head reached the perineum, so low forceps were applied under ether anesthesia and a still-born baby delivered. Nothing, however, seemed to affect this patient's downward course and she died twelve hours after her admission to the hospital. The blood pressure was not taken before admission to the hospital, so we cannot state for certain that this was never high. There was no edema. As stated previously, we look upon low blood pressure and no edema in the presence of convulsions as unfavorable prognostic signs.

Case No. 2, Mrs. M., Para. 1, age 29. Seven months pregnant at the time of admission. Generalized edema with headaches, dizziness and spots before the eyes about three weeks before admission. Not improving under treatment. Blood pressure, 212/120. Urine—albumin plus 4, with hyaline casts plus 2. Labor induced by bougie and packing. Uneventful delivery. Baby lived three days and died apparently from premature birth. This case is reported as a typical case of the so-called nephritic type of eclampsia. Eight months after delivery she still has a blood pressure of 200/110 with albumin and casts in her urine, although the edema has subsided and she has no complaint.

Case No. 3, Mrs. J., Para. 1, age 24. This case is reported principally because we have never before seen a similar one. She was seen in the office at seven and one-half months the day before admission to the hospital. Her course until that time had been entirely uneventful and better than the average. On finding that her blood pressure had risen from 120 to 150, we advised restricted diet, rest in bed and a return to the office in three days. Urine was negative and patient had no complaint of any kind. The following morning she called to state that the membranes had ruptured, so she was advised to come to the hospital. At the time of admission her blood pressure was 170/120. Delivery was spontaneous and uneventful. The baby began to have convulsions a few hours after delivery and continued to have them at frequent intervals for a period of thirty-six hours. After this its course was uneventful and it is now a normal baby in every respect. The mother did well following delivery until the fourth night when she began having generalized convulsions. After having three of these, she responded to treatment, and her convalescence was uneventful, blood pressure being 120/70 at the time of discharge thirteen days after delivery. Examination of the placenta showed an area of infarction. Blood Wassermann and all other examinations were negative. One year following this delivery the patient had a spontaneous abortion at the third month. On the fourth day following this she had two generalized convulsions. For three weeks the patient complained with some headache and dizziness. Physically she is apparently perfect. A basal metabolism test showed a reading of minus 12. She improved while taking small doses of thyroid extract, but we are still uncertain what to advise her as to future pregnancies.

## Conclusions

Our study has convinced us that:

1. While a definite general plan of treatment for eclampsia is indicated, no specific routine followed in all cases will give the results that can be obtained by individualization.

2. Early induction of labor when eclamptic toxemia is not responding to treatment will lower both fetal and maternal mortality.

3. Impulsive and ill-timed efforts at delivery are to be strongly condemned.

4. Control of convulsions is important and, if all other methods fail, the use of ether or chloroform is justified.

5. Cerebral edema can often be relieved by spinal puncture and convulsions controlled in this manner.

6. Large doses of morphine are seldom if ever necessary.

7. There is no specific sedative or hypnotic, but our best results are now being obtained in most cases by the use of sodium amytal or nembutal.

8. We have seen no harmful effects or results from the use of magnesium sulphate in moderation.

9. Dextrose solution intravenously is indicated.

10. Low blood pressure and absence of edema in the presence of convulsions give a bad prognosis.

*Lewis-Gale Hospital.*

## FACTORS INFLUENCING MORTALITY IN OPERATIVE CARCINOMAS OF THE LARGE INTESTINE.*

A. STEPHENS GRAHAM, M. D., M. S., Richmond, Va.

Mortality following radical and palliative operations on the large bowel, contrary to an apparently widespread opinion, is not prohibitive, nor are fatalities from recurrence so discouragingly numerous as was the case a quarter of a century ago. At about that time barely 25 per cent of the diagnosed cases were operable, 20 to 50 per cent of those who were operated on died in the hospital, and well over 85 per cent of the survivors eventually succumbed to recurrence. In striking contrast to these results, surgeons during the past decade have reported operability rates as high as 65 per cent for large series of cases while a comparative study of the mortality rate for individual surgeons and institutions by five and ten-year periods has revealed a progressive decline until now the general rate for all types of operations, in the hands of experienced surgeons, approaches 10 per cent. Moreover, the incidence of recurrence as determined for numerous large groups of cases varies from 25 to 50 per cent, which is an improvement of 40 to 60 per cent over the best available figures several decades ago. In other words, until relatively recent years fewer than five out of one hundred patients, in whom a diagnosis of malignancy of the large bowel was established, were alive five years after operation, whereas now we can reasonably expect between thirty and fifty to be living at the end of such a period. As a matter of fact, a study of any statistical data which are available indicates that more patients with carcinoma of the large bowel and rectum are found to survive over a given period of years than those with carcinomas of any other portion of the gastro-intestinal tract.

To the trained proctologist, roentgenologist, and surgeon must go the foremost credit for this recent progress but its continuation, I am convinced, will depend more upon the general practitioner and medical specialist than upon the surgeon whose skill and ingenuity in devising technical procedures has reached a point beyond which relatively small improvement can be expected. The sum and substance of the matter is that in order to make further gains there must be a material increase in the number of cases diagnosed early. In this manner we may hope to augment the operability and after all it would appear to me that one must regard operability as the mainstay to successfully combating malignancy. That is to say one should rather consider how many persons out of a hundred will be benefited either by operative measures or curative interference over a term of years than how many successful technical procedures may be accomplished with a low hospital death rate.

Malignancy of the colon and rectum give rise to a variety of symptoms, none of which are pathognomonic but if the two cardinal features, namely, rectal bleeding and change in bowel habit, alone were kept in mind and when encountered would universally prompt thorough investigation of the gastro-intestinal tract, starting with digital and proctoscopic examination of the rectum and proceeding through to roentgenoscopic study of the colon after barium enema, then I am certain that inoperable cancer of these structures would become exceedingly rare and in this manner would the deaths, both immediate and remote, be reduced to a minimum. The earliest and most constant sign of malignancy of the left half of the colon and rectum, in my experience, has been blood which may appear mixed with the stool or may simply streak the stool. Hemorrhoids are frequently associated with rectal cancer and in many instances are quite misleading. Rankin and Jones reported that in 10 per cent of three hundred cases operation had been performed for hemorrhoids after the onset of symptoms despite the fact that a growth was in reach of the examining finger or demonstrable with the proctoscope in every instance. Similarly, in my own prac-

*Upon author's request, because of lateness of the hour, read by title at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

tice since January 1, 1933, four of fourteen (29 per cent) cases had been treated for hemorrhoids after the onset of symptoms, yet in three instances a cancer was palpable on rectal examination.

Change in bowel habit is of a significance almost equal to that of rectal bleeding but unfortunately it is often erroneously interpreted. Loose stools, even to the number of fifteen or more in twenty-four hours, need not indicate dysentery or colitis since only too often does almost complete obstruction from an annular cancer give rise to such symptoms following repeated purgation. Increasing constipation, frequency of stools, alternating constipation and diarrhoea, however slight, if it persists, and particularly if the patient is past forty, should prompt a painstaking examination of the gastro-intestinal tract.

Among the other factors that influence mortality there are several that deserve special consideration, such as the pre-operative preparation of the patient, the choice of anesthesia and operative procedure, and the post-operative care. Adequate care in preparing these patients for operation is, in my opinion, secondary in importance only to the early recognation of the malignancy. Emergency surgery rarely is necessary or justifiable in such cases since obstruction, when it develops, is slowly progressive and well tolerated, even for a week or more after it becomes complete. The blood chemistry under such circumstances, in striking contrast to the findings in acute obstruction of the small intestine, may remain unaltered. It is always advisable to hospitalize the patient for a period of time sufficient to enable decompression of the obstructed colon and restoration of the hypertrophied and often edematous bowel to a healthier state, to combat dehydration and the effects of malnutrition, and to permit an investigation of the function of the other organs of the body. My own regime during this pre-operative interval is briefly as follows: (1) Repeated colonic irrigations with normal saline solution; (2) high caloric low-residue diet, consisting chiefly of carbohydrates; (3) forced fluids orally, subcutaneously, or intravenously; (4) transfusions when indicated, and, (5) special measures directed toward overcoming concurrent disease in other organs. (6) Intraperitoneal vaccination against peritonitis in certain cases. Obstruction in the urinary tract or cardiovascular disease will be the complicating disorders most frequently encountered since many patients with surgical lesions of the colon and rectum are elderly and many of the men have more or less prostatic hypertrophy.

The patient should be carefully observed during the period before operation in an effort to estimate surgical risk and to make the selection of a procedure that seems wisest in the individual case. The employment of one operation to the exclusion of all others decidedly narrows the scope of usefulness which surgery offers these sufferers, and unquestionably vitally influences immediate mortality, functional results, and ultimate survival. The object in every case should be to consummate the most radical excision of the involved segment of bowel and its contiguous lymphatic structure which is consistent with reasonable prospect for recovery, but in judging the extent to which a procedure should be carried one must be led by the circumstances in each case, as the age and sex of the patient, the presence of obesity, profound anemia, marked loss of weight or evidences of associated disease in other organs. The more radical operations, such as the combined abdomino-perineal resection of the rectum should be reserved for the relatively young and robust individual and seldom be employed for the elderly or markedly debilitated patient who might, however, well tolerate the more conservative perineal resection of the rectum, which is preceded several weeks by a colostomy.

The choice of an anesthesia should be made in a manner similar to that employed in the selection of the operation. For those patients who are in fairly good physical condition, one can use ether, gas, or spinal anesthesia with excellent results. For the debilitated patient local anesthesia, with or without gas, and supplemented by ether if necessary is the safest method, while spinal anesthesia should be used in very small doses, if at all. Spinal anesthesia when not definitely contra-indicated appears to be peculiarly applicable to surgery of the colon. It provides excellent relaxation during the operation and in conjunction with liberal post-operative use of morphia insures against return of peristalsis for a period of forty-eight hours or longer. This feature is very important in view of the lethal nature of the bacterial flora inhabiting the colon and because of the frequency with which the bowel is purposely temporarily obstructed as a part

of the operation. For surgery of the anus and rectum sacral block offers an even greater margin of safety yet provides ample relaxation and anesthesia.

Too much emphasis cannot be placed on the importance of carefully regulating the postoperative regime as a factor in reducing mortality. Complications are of frequent occurrence and considerable variety but many of these may be prevented, or, by early recognition, their progress be stayed. Sepsis, shock and collapse, pulmonary complications, and urinary disorders are the chief causes of immediate death. Danger from sepsis may be minimized by the control of peristalsis during the initial forty-eight hours through the free use of morphia and the prohibition of fluids by the oral route. Shock and collapse are more readily prevented than relieved and, since many of the patients under consideration are debilitated or must undergo drastic and time consuming procedures, it is well to institute preventive measures while the patient is still on the operating table. In some cases this will entail merely the subcutaneous administration of normal saline solution, or intravenous injection of glucose solution but in many instances a transfusion will be indicated.

Pulmonary complications need no special comment here since the same problem obtains following operations on other organs. Fatalities from infection in the urinary tract probably can be prevented with a greater degree of certainty than the other complications if a few precautionary measures are taken. Urinary retention should be prevented or relieved promptly. Rather than practice repeated catheterizations over a long period, I install a permanent catheter prior to or soon after operation in most cases of carcinoma of the rectum. The catheter is irrigated twice a day and changed every five days. Before removing the catheter, it is clamped off for gradually increasing periods until at the end of about the third day it is left closed, except when the patient has a strong desire to void.

Among the most unexpected and dangerous complications which occasionally follow surgical procedures, especially those that involve the gastro-intestinal tract, is an acute, inflammatory and frequently suppurative process of the parotid gland either on one or both sides. The cause of parotitis is not clearly understood but it is highly probable that the incidence can be lowered by preventive measures. Since it is necessary to keep patients who have had resection of the colon and rectum without food or drink by mouth for three or four days, conservation of function of the parotid gland may be attempted by permitting the patient to suck slices of lemon or chew gum. Special efforts also should be made to keep the mouth thoroughly clean. However, once the inflammatory process has become evident, progress can often be arrested and suppuration prevented by early application of radium to the swollen gland. Of the twenty-eight patients at the Mayo Clinic who were treated with radium, only four died. Three of the deaths occurred after the parotitis had completely subsided and at necropsy the primary cause of death was found to be elsewhere. This gives a mortality in the cases treated with radium of only 3.5 per cent, if the three deaths can be excluded. In the fifty-eight cases in which radium was not used twenty-three of the patients died, a mortality rate of approximately 39 per cent. Surgical drainage was necessary in twenty-four of the fifty-eight cases and 50 per cent of these died. Yet, of the twenty-eight cases in which radium was used, in only two was it necessary to substitute surgical drainage and neither of these died.

503 *Medical Arts Building.*

### Discussion*

Dr. D. M. Thomasson, Lynchburg: As diagnosis of cancer of the large intestine frequently demands the services of the diagnostic team, including a clinician, a radiologist, a pathologist and a surgeon, I shall confine my remarks to the subject of early diagnosis of cancer of the rectosigmoid, which now totals 5 per cent of all cancers, and should be diagnosed by all of us if we will only make a careful rectal examination.

It might interest you to know that every case of rectal cancer admitted to the service of Dr. Curtice Rosser, at Baylor University Hospital in 1931, came with a history of operation, or palliative treatment for relief of rectal symptoms. Among the cases was one sixty-one year old physician, who was subjected to a hemorrhoidectomy in June, treated intensively for amebic dysentery in July and August, and in September found to have a large, easily palpated, rectal cancer.

The first point to be stressed most insistently with regard to growths in the rectum is the necessity for an early diagnosis; and it may be added, for a correct diagnosis, which is essential for success in the treatment for malignant diseases.

Charles Gordon Watson, of London, makes the definite statement that cancer of the rectum in the earliest stages is a local disease, which is limited to the mucosa and sub-mucosa, and as such, can be cured by radical surgery in the great majority of cases.

*Prepared in advance of meeting and handed in for publication.

The onset of the disease is insidious, painless and practically symptomless for many months. The textbook syndrome of loss of weight, cachexia, obstruction and abdominal distention, which accompanies final stages, is of no practical diagnostic import. As Dr. Graham has just told us, irregularity of the intestinal habit, with the loss of blood, is the most early and constant symptom. Bleeding then, is probably one of the early manifestations of cancer of the rectum, and by some, rectal bleeding indicates cancer until neoplasm is eliminated by the most thorough diagnostic method.

Digital examination, although valuable, should never be considered conclusive. It will determine the presence of tumor in some 75 per cent of the cases. Visualization of the tumor is, however, essential in all cases.

By proctoscopic examination four factors can be determined: First, it will determine the site of the growth; second, the size of the tumor will be revealed; third, the degree of obstruction will be estimated; and fourth, it will determine the amount of fixation. Biopsy is an extremely important step in determining the grade of malignancy.

"The typical malignant ulcer of the lower bowel is a single lesion. It is indurated. Its surface presents a crater-like depression, which bleeds easily. The mucosa immediately adjacent to the firm, everted edge is normal in every respect." (Buie.)

Gradually the public is becoming more and more aware of what scientific medicine has to offer in saving life when cancer threatens and, for many reasons, among which the early recognition of rectal cancer stands foremost, I advocate routine proctoscopic examination as the necessary procedure in every general examination, for rectal cancer untreated has a 100 per cent mortality.

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## CORONARY THROMBOSIS.*

JOHN HUNDLEY, JR., M. D., Lynchburg, Va.

With increasing accuracy in diagnosis, closer observation of the patient, and the assistance of the electrocardiograph, coronary thrombosis is no longer a postmortem pathological curiosity but a finding not at all rare. The condition is not uncommonly given as a cause of death, and seems to be increasing in incidence, largely, I feel, as a result of the more careful diagnosis.

Coronary thrombosis is the sudden occlusion of one of the main branches of the coronary arteries, either by thrombus or embolism, and is one of the results of atheromatous or arteriosclerotic changes, occurring locally in the coronaries or as part of a general process.

That branch of the left coronary artery which descends near the interventricular septum, supplying part of the septum and most of the left ventricle, including the apex, is the vessel most frequently affected, largely because of a narrowing of the lumen of the vessel just distal to the branching. Other coronary arteries may also be the site of an occlusion, but less frequently. Contrary to belief long held, the coronaries are not strictly end arteries, but the anastomosis is poor and variable. The fact that anastomosis is possible is proven by the not infrequent finding at autopsy of an old occlusion, having gradually occurred without recognizable symptoms during life. A sudden blocking produces marked changes accompanied by violent and rather definite symptoms.

The etiology of coronary thrombosis is that of local atheromatosis, and is unknown. Syphilis plays slight, if any, part. Hypertension is frequent. The only constant, or relatively constant factors, are the age group, usually fifty to sixty or above, and the much greater incidence among men. Alcohol, tobacco, exercise and food seem to have no relation. Osler thought that the social status played some part, but all types, from the most intellectual to the most ignorant laborer, are affected.

Pathologists had noted the condition for years, but only comparatively recently has the symptomatology been related. The typical history is somewhat the following: A man above the age of fifty, with slight or marked hypertension, is subject to occasional attacks of substernal pain which may be only a sensation of fullness, or they may be stabbing, gripping or burning, all symptoms which have frequently been related in the patient's mind to indigestion. He may or may not have had some shortness of breath. Suddenly the man is seized by an agonizing pain, quite different from what he has previously experienced. He is unable to remain still, and movement does not, as in angina pectoris, increase the pain. He may gasp for breath, become cyanosed, skin become cold and clammy, and sweat profusely. Often he is nauseated and may vomit. The pain may extend over the entire chest, into the left arm, or even into the right arm, or may be largely lower thoracic and epigastric. The pain is constant, lasting for hours or days, without ease or relief except a slight ebb and flow. The symptoms vary. The cyanosis may be severe or absent; likewise the dyspnea. The frequent nausea may be followed by vomiting or diarrhea. There may be urinary suppression. There is a group with no pain but a sudden severe dyspnea with a profound weakness. The onset often wakens the patient out

*Read before the South Piedmont Medical Society, at Lynchburg, Va., April 18, 1933.

of a sound sleep, or comes on during rest. The entire picture is one of a severely ill patient, in an acute emergency.

The physical signs are utterly out of proportion to the appearance of the patient. Turning from the contemplation of an individual evidently acutely ill, to the examination of the heart, very little is found indicative of the seriousness of the situation. The patient is ashen gray, with a mixture of pallor and cyanosis, beads of sweat cover the face or a profuse perspiration is present. The pulse is variable, usually irregular, often rapid and thready, and occasionally dropped beats are noted. The blood pressure is generally low, markedly so in those cases having a pre-existing hypertension. The notably sick appearance, with the mild heart signs, may, especially in those patients with nausea and vomiting and epigastric pain, serve to distract attention from the seat of the trouble in the heart and focus on the possibility of an acute abdominal emergency.

Diagnosis of the condition very largely depends upon keeping in mind the possibility of its occurrence. The symptomatology is varied, and there is no one diagnostic feature. The entire picture makes the diagnosis. The patient is usually a male, past the age of fifty, giving a history of mild substernal distress for some time preceding, having a sudden attack of severe substernal pain, not related to effort, not relieved by rest or vasodilators, the pain continuing without ease or fluctuation, and is often referred to the left arm. The attack is accompanied frequently by nausea, vomiting and even diarrhea. The expression is pale and cyanotic, and the face covered with sweat. Definite cyanosis is present, with dyspnea of varying degree. Rales are noted in the bases of the lungs behind. The pulse is weak and heart sounds distant. Heart action is irregular. Blood pressure is lowered. Later, in two to five days, there is a slight elevation of temperature to 99 or 100, a leucocytosis of 12,000 to 15,000, occasionally more, with polymorphonuclear cells predominating. Occasionally there may be heard a pericardial friction rub three to eight days after the onset, and persisting for two or three days. This is the picture from which the diagnosis can usually be made by following closely the patient, and keeping in mind the possibility of the occurrence of a coronary thrombosis.

The electrocardiographic signs are often conclusive, and may locate specifically the lesion. But negative signs are of no value, and the patient should never be moved to an electrocardiograph.

Coronary thrombosis must be differentiated from other conditions in which thoracic pain is a prominent symptom. Angina pectoris occurs in the same age group, is marked by a sudden onset of excruciating substernal pain, usually following exertion or an emotional upset. The pain is relieved by rest and by the administration of nitrites. Pallor is present, but no cyanosis. The blood pressure rises during the attack, and the attacks are short. It should be remembered that coronary thrombosis may follow years of anginal attacks, and, oddly, following recovery, may terminate the attacks of angina. Valvular heart disease, especially mitral stenosis, may result in severe precordial pain. This occurs most frequently in younger people, and the characteristic murmur makes the diagnosis clear.

Syphilitic aortitis is accompanied by pain under the manubrium, which is more of an ache or an oppression, rather than the stabbing agonizing pain of thrombosis. The history of syphilis, at times the examination of the heart and aorta and the Wassermann or Kahn reaction serve for differentiation. Syphilis is rare as a causative factor in coronary thrombosis.

The most difficult, and the most frequent condition requiring differentiation from coronary thrombosis, is the acute upper abdominal condition. In thrombosis there may be localization of the pain at the tip of the ensiform, nausea, vomiting, and even diarrhea may be present, as well as a rigid epigastrium. There is collapse and rapid thready pulse in both conditions. These symptoms may be present in perforated gastric or duodenal ulcer, acute gall-stone colic, perforation of the gall-bladder, and acute pancreatitis. Rarely a gastric ulcer may perforate without giving previous symptoms of gastric disease, but generally a careful history will elicit a record of previous trouble related definitely to the abdomen. The history may disclose previous attacks of shortness of breath, or mild cyanosis, which will refer more definitely to the heart as the site of the trouble. Physical examination of the heart or the abdomen will give little help, but it would be exceedingly rare in an attack of such violence

that there would not early be present, in the bases of the lungs behind, scattered rales which would definitely place the condition as one which is cardiac in origin.

The prognosis of an attack of coronary thrombosis is most difficult to give. Formerly the condition was felt to be almost invariably fatal, but more cases are being diagnosed, and the outcome is much more favorable in the light of more recent work. White recently reported a case which he had followed for seventeen years, finally dying from an attack of cerebral hemorrhage, and autopsy disclosed the old healed scar of the heart muscle. The prognosis is, of course, dependent upon the size of the vessel affected, the area of muscle supplied by that vessel, the condition of the muscle preceding the thrombosis, the extent and severity of the vascular sclerosis, other conditions of the heart and circulation, and, after recovery from the initial attack, the care which the patient will, and is able to take of himself. The attack may terminate fatally within a few minutes or hours, or after a few days or weeks. Such fatalities are due either to rupture of the heart muscle, weakened by thrombosis and lack of blood supply, or to ventricular fibrillation. Weeks or months later the thin scar tissue at the site of the thrombosis may rupture as a result of some comparatively slight exertion. The after-care, scrupulous living within the limited heart capacity, will save many cases recovering from the initial attack for years of comparative usefulness and activity.

Treatment may well be divided into that of the immediate emergency, and the after-care. The immediate requirement is relief from the agonizing pain. For this morphine is necessary in adequate doses, up to one grain in a four-hour period. The vasodilators are useless, and nitroglycerine may be actually harmful. After the heart rallies digitalis should be given in full doses. In ventricular tachycardia quinidine sulphate may be life saving, and there seems to be less risk in its administration in these cases than in the old fibrillating hearts. The administration of drugs is, however, the least important. Prolonged and absolute rest in bed is essential. Nothing should be permitted to the patient to perform for himself. The slightest exertion may provide the additional strain which will rupture the damaged myocardium. The period of rest in bed is variable. Lewis states that the myocardial scar is firm in eight weeks, but even longer may be required to gain assurance from risk. The general treatment is unimportant—a light diet, mild laxatives or daily soap suds enema, and water within normal limits.

After the myocardium has healed and the heart indicates that it is able to assume some additional burden, the patient is allowed out of bed and the problem of the future must be faced. Educating the patient to live within restricted limits, avoiding every exertion or excitement, stopping at the first sign of shortness of breath, giving up those games, letting others drive his car, avoiding long tiresome trips, the thousand and one *don'ts* that the patient will have to impose on himself, making him realize the absolute necessity of living within such limited range, and at the same time keeping him from feeling that such a life is not worth living,—that is the test which will try the patience and strain the personality of the most gifted physician.

To summarize, coronary thrombosis is more frequently seen and more clearly recognized than formerly. "It is the one primary cause of sudden dramatic death in an apparently healthy individual." Certain conditions apparently predispose to or precede an attack. They are—age over fifty, males most often, general or local arteriosclerosis, hypertension, anginal attacks or mild persistent or recurring substernal pains, discomfort and fullness of the epigastrium after meals, slight shortness of breath and slight cyanosis on exertion. The diagnosis of the attack is not too difficult if the possibility is kept in mind. Treatment is rest, absolute and prolonged. The prognosis is uncertain, but, having survived the initial attack, a reasonably long and useful life is possible to those patients who can be made to realize and live within their individually determined and much reduced cardiac capacity.

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## A DISCUSSION OF PAINLESS LABOR.*

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Discussions of painless labor usually begin with an account of the history of obstetric anesthesia. I will, therefore, not take up your time in such a manner but instead, I would like to review briefly the physiology of parturition, as that is the foundation upon which one

*Read before the Medical Association of the Valley of Virginia, May 25, 1933.

should build the conduct of painless labor. Some 267 days after conception, or 280 days after the first day of the last menstrual period, the patient usually goes into labor. Just why, is another question. My own theory is that the natural emptying function of the uterus is held in check by a hormone that is manufactured first by the corpus luteum and later by the placenta. Normally the placenta undergoes senile changes towards the end of pregnancy and when its secretion sinks below a certain level the patient goes into labor. There are certain prodromal symptoms. The patient feels like she is going to menstruate. Menstruation and labor are qualitatively the same process. In one case, the unfertilized ovum is delivered, in the other, the fetus. The preparturitional stage is accompanied by profound metabolic changes, as is shown by an increased excretion of sodium chloride in the urine, and an increased nitrogen output, with an increased percentage of ammonia, amino acid and creatin fractions.

Clinically, there is a loss of weight in the last week or ten days of pregnancy. The cervix is softened and somewhat dilated and is usually effaced. Until this "ripening" takes place, the uterus is relatively inert and the cervix resists very decidedly efforts to make it dilate. Knauss, experimenting with rabbits, has shown that before this time injection of extract of posterior pituitary has no demonstrable effect upon the uterus, but as the uterus "ripens" the effect of this drug becomes more and more evident. Just as the uterus passes the threshold of excitability the cervix is so resistant that the majority of the litter are stillborn, but the closer to term the rabbit is, the more readily does the cervix dilate and the fewer stillbirths. This is an important observation and has much clinical significance.

The purpose of the first stage of labor is the dilatation of the cervix. This is accomplished entirely by uterine contractions. The textbooks speak of the membranes and the amniotic fluid in front of the presenting part, the forewaters of the Germans, as an hydrostatic wedge. This is probably incorrect. There is some experimental evidence to show that the cervix dilates actively in the same way that sphincters elsewhere in the body do, as for instance, the pylorus We know that if you rupture the membranes in the early part of labor or even before labor starts, dilatation takes place if anything more rapidly than it would have done had the hydrostatic wedge been present. Be that as it may, the uterine contractions are necessary to cause the cervix to dilate and they are associated with pain which increases in severity as the labor progresses.

At the end of some sixteen hours in primiparae and eleven hours in multiparae the cervix is fully dilated. The patient now passes into the second stage of labor, the so-called expulsive stage. The force of the uterine contractions are no longer sufficient and must be augmented. In normal labors this is accomplished by bearing down which the patient does reflexly. The powerful abodminal and respiratory muscles are able to push the fetus along the birth canal until it appears at the vulva and is finally expelled. The pain in this stage is much more severe, not only because the contractions are harder but also because the presenting part stretches and tears the birth canal.

The third stage is like the calm following the storm. The placenta is separated from its attachment to the uterine wall by rhythmic contractions of the uterus. When it becomes separated it drops down into the lower uterine segment. To expel it the uterus normally needs outside help of some kind. With the delivery of the afterbirth the story is by no means ended. The uterus must remain tonically contracted in order to prevent serious or even fatal hemorrhages from the raw placental site.

The problem now is what can we safely do to ameliorate the pains that accompany these very essential uterine contractions. The question that I am asked most frequently is why I induce labor. It seems to be taken for granted induction of labor is an essential part of what people speak of as my method. I want to say right here that I have no fixed method. I study my patients and try to outline a treatment that seems best suited to the individual patient. Induction of labor is not necessary, it is merely more convenient to most patients. I find that the great majority of patients like to plan ahead and to go into the hospital on a fixed date. If the history, the measurements of the fetus and the feel of the cervix indicate that the patient is at term, I see no objection to setting a definite date for the delivery. When there is obesity, hydramnios or multiple pregnancy, the measurements of course are not to be relied upon. By getting the patient to

the hospital before the pains begin one can more easily control the first stage pains. In round numbers 80 per cent of my patients elect induction of labor. The simplest way to induce labor at term is to give the patient castor oil one ounce and quinine gr. v., an hour or so before rupturing the membranes.

The problem of pain relief in the first stage is to give enough analgesia to keep the patient from remembering her pains but not enough to stop or slow down the uterine contractions.

The drugs that have served me best are: sodium-amytal by mouth augmented as necessary by hyoscin hypodermically, (2) morphine and hyoscin hypodermically, (3) quinine-ether-oil per rectum, and (4) avertin per rectum. At times it is best to switch from one to another as circumstances demand.

For best results with sodium-amytal, one should begin before labor starts or certainly before the patient has hard pains. The drug is rather slow in acting and its effect lasts twelve to twenty-four hours. Routinely I give the patient twelve to fifteen grains at once and supplement this with hyoscin in doses of 1/200 of a grain, often enough to keep the patient asleep between her pains. In multiparae who start with good hard pains I vary this routine by giving 1/100 grains of hyoscin at the initial dose. All writers on sodium-amytal mention the danger of shock in the occasional patient and this must always be borne in mind. I have an idea, although my cases of shock have been too few to prove it, that shock is more likely to occur in those patients who are having hard pains before the sodium-amytal is given. The cases of shock that I have had, have all responded to elevation of the foot of the bed, a hypodermic of 1/30 grain of strychnine and a hypodermoclysis of saline solution with 1 c.c. of pituitrin in the first 500 c.c. of fluid.

Morphine and hyoscin are better adapted to the patient who has already started having good pains when you first see her and who has more than three hours of labor ahead of her. I give an initial dose of 1/6 gr. of morphine and 1/200 gr. of hyoscin and repeat the hyoscin as occasion demands. I try to keep her sleeping between pains or else definitely disoriented.

The rectal administration of ether-in-oil had best be given after the cervix is one-half dilated. It can be used with patients who come into the hospital at that time or upon those who do not seem to be getting the proper relief from the first or second method of treatment. The formula that I use is the No. 3 of Gwathmey's original communication, i. e.; quinine grs. x, alcohol two drachms, ether two and one-half ounces, oil q. s. ad four ounces. This can be repeated either in full quantity or in one-half doses as necessary. It is very useful in tiding over the last part of the first stage and the first part of the second stage.

Avertin, 65 mgm. per kilo of body weight, can be used in much the same way as the ether-in-oil. It acts more quickly and does not last quite so long. It is a somewhat quieter and smoother basal anesthesia than the ether-in-oil. I am especially fond of it in those cases that come into the hospital with nearly full dilatation or when labor is induced with a bag, as it seems to hasten the dilatation under such circumstances.

When the patient gets into the second stage of labor, the problem is somewhat different. The pains are harder and some form of anesthetic is needed. With the patient in the hospital, I am not so concerned about stopping the progress of labor, for if we do, it is an easy matter to terminate labor with forceps or by version. I am concerned, however, with the possible effect of the anesthetic upon the baby and upon the tonicity of the uterus in the third stage.

Ether is still the safest of all anesthetics and this applies to the effect upon the newborn also. The babies are somewhat anesthetized when they are born and are somewhat slower in breathing. This may be a benefit rather than a disadvantage for such babies are less apt to aspirate infectious fluids from the birth canal into their lungs.

I rarely use chloroform except to relax a nervous patient for a moment so as to introduce a bag, or to do a low forceps operation. When given skillfully it is an ideal anesthesia for versions, but nowadays it is hard to find an anesthetist who is skillful with chloroform. Most of the modern internes have learned to *pour* ether and do not readily *drop* chloroform.

Nitrous oxide-oxygen as an anesthetic, in contradistinction to an analgesic, has never appealed to me. There is always more or less cyanosis in the mother, which the baby must

necessarily share and I have felt that cyanosis was one of the predisposing causes of cerebral hemorrhage in the newborn. Similiarly, ethylene has been disappointing to me. There was a definite increase in my fetal mortality when I was using ethylene, which promptly subsided when I stopped using it.

Spinal anesthesia has a definite, although small place in obstetrics. It is an ideal anesthesia for Cesarean section, and for operative delivery from below, when the patient has some chest or kidney trouble that is a contraindication to an inhalation anesthesia. For forceps or version, 50 mgm. of novocain dissolved in the spinal fluid is perfectly satisfactory.

Local infiltration of the perineum with 0.5 per cent novocain for forceps operations, episiotomies and repairs should be used more frequently than we do. My present practice is to use local anesthesia if the patient comes to the delivery room deeply under the influence of the first stage analgesia, or if the patient has a head cold, and in times when influenza is prevalent.

### Results

With the principles laid down firmly in your mind and with the drugs mentioned, one can get complete amnesia from the time the treatment is started in over 94 per cent of one's cases. The failures fall into two groups: (1) the somewhat inert uterus that stops work when any analgesia is given; (2) the patient that makes such rapid progress that the first stage drugs do not have a chance to act. One can always relieve the second stage pains for you can always anesthetize your patient. If the progress of labor then stops it is comparatively simple to deliver the patient artificially.

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## IS POLIOMYELITIS A "CONTACT" DISEASE?

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To discuss this problem it is necessary to consider the methods of spread of the communicable (parasitic) diseases of man. This may be done briefly. It is assumed that such diseases have a living cause, and the term "parasitic" as herein used refers to such living organisms regardless of their classification or size. Parasites find their way from infected to non-infected hosts either directly or through intermediate agencies. Direct transfer is by actual inoculation, as in the venereal diseases and in the bites of infected animals, or by close association of persons, as in the case of smallpox, measles, and the common cold. The intermediate agencies in the transfer of the disease-producing parasites of man are of two classes only. These are food and insects. In thus limiting the intermediate agencies involved, such vehicles of transfer as the fingers, droplets of sputum, and others, are considered as mechanical factors in direct transmission. A large number of insects and a great variety of foods are implicated in the intermediate parasitic transfer. The word "contact," as here used in quotation marks, implies only such relatively close personal association as seems necessary for the spread of measles or the common cold.

Consideration may first be given to the diseases usually looked upon as contagious. Those diseases which are spread only by "contact," as this term is here defined, may be looked upon as of two classes: those of unknown causation, and those in which the exciting cause is supposedly known. In the first group, the causative agent apparently does not live outside the human body even in the lower animals. These diseases are smallpox, chicken pox, mumps, measles, German measles, whooping cough, influenza and the common cold. They are the contact diseases par excellence, and casual close contact is sufficient for the transference of the exciting cause from an infective person to one who is not immune. The "contact" here may embrace actual touch, as in a hand-shake, droplet infection, freshly contaminated dust and freshly infected fomites. The infective agent here proceeds by these means in the living state in small numbers, probably, from one human host to another with no multiplication in numbers en route; and any agency involved in the transfer, as the fingers, a droplet of sputum, the clothing, or what not, is simply a mechanical factor in transferring quickly a living parasitic organism from one host to another, the parasite having no ability to exist for prolonged periods outside of such a host except under unusual conditions. These are "virus" diseases, and the causative parasites have not been seen.

The second group embraces the pneumonias, epidemic cerebro-spinal meningitis and pneumonic plague. The causative organisms here are supposedly known and it is the general

belief of the profession that contact is the only —or certainly the chief—method involved in their transfer from the infective to the susceptible. The three organisms here concerned may be cultivated in the laboratory and all may affect other animals than man. They may and do live outside of human hosts, thus giving rise to an intimation that intermediate agencies may at times be involved in the transmission of these diseases. Leaving aside this possibility, there are given above all those general diseases which are indisputably spread by "contact" of individuals one with another. There is no occasion or opportunity for an increase in numbers of the infecting parasites outside of the human host in these "contact" diseases The heat of Summer and the heat of the Tropics play no part in the multiplication of these causative parasites. If heat plays any part in their transference, it must be to diminish their numbers and their virulence, and the incidence of the diseases caused by them. The temperature of the human body, being practically a constant factor in all seasons and climates, these parasites are not involved in seasonal and climatic changes. The presence or absence of the diseases caused by them is entirely accidental or casual in any community except as vaccination against smallpox may limit this disease, and as the presence of bubonic plague may make for an occasional outbreak of the pneumonic form. If in the Temperate Zone these diseases show regularly higher incidences in certain seasons, these are always such as are influenced by a closer association of the populace at the times of higher incidence. Such closer associations are voluntary for purposes of comfort and pleasure in Winter, and compulsory for school attendance in all months of the year except the Summer months. It is needless to state that not one of the diseases above mentioned has a characteristic high hot weather incidence, even though there may be Summer outbreaks of any of them. There is nothing to indicate that the Summer makes for an increase of these diseases. Quite the reverse is true. Contact of persons is at a minimum during the Summer and early Fall and the incidence of all of them is low accordingly.

There are other diseases of man of greater or less significance, general and local, which are transmitted only by contact; and this contact is in reality an inoculation. These have no maximum seasonal incidence—certainly not a high Summer incidence. They are syphilis, yaws, gonorrhea and chancroid.

Man contracts certain diseases from the lower animals directly, either by inoculation or by "contact." Such are rabies, anthrax, tetanus, actinomycosis, glanders, foot and mouth disease, psittacosis and rat-bite fever. The "contact" in these is seen principally in glanders and psittacosis. These diseases are seasonal in man only as they may be seasonal in the animals involved. If rabies in man is a Summer disease, as popularly supposed, it would be related to a Summer incidence in dogs. This might, in turn, be related to the Summer presence of ticks or fleas. A high hot weather incidence in this group due to "contact" is lacking.

There are several supposedly communicable diseases of man in which the mode of transmission is entirely obscure. Contact, in all of its meanings, is, of course, suspected, as are intermediate agencies. If "contact" exists as a factor, it does not make for a high Summer incidence. Among these diseases are leprosy, rheumatic fever, acute follicular tonsillitis, and erysipelas

Trachoma, pink eye, granuloma inguinale, furunculosis, septicemia and Vincent's angina are diseases of man which are indefinite in many ways. Apparently confined to the human species, there may be an element of "contact" as also of intermediate transmission. Yet there is no seasonal variation of consequence—certainly no high Summer incidence.

In the diseases thus far mentioned there is no evidence pointing, directly, to transmission by insects or foods. Following are several groups which are associated wholly or in part with food or with insects—taeniasis, ascariasis, uncinariasis, trichiniasis, schistosomiasis, guinea worm, whip worm and the pin worm are infections or infestations of man by animal parasites which have little or no bearing upon a discussion of contact infections. Man acquires these parasites principally through foods, although some of them occur through skin implantation.

There are certain other diseases of man, of known and unknown causation, wherein there is an element of "contact" involved. The percentage of cases spread through "contact" varies from an almost negligible one to a relatively high but undetermined figure. Some of

these diseases are transmitted almost entirely in nature by the intermediate agency of food either from man to man or from animal to man. These are typhoid fever, cholera, dysentery (bacillary and amebic), Malta fever, septic sore throat, and the infectious diarrhoeas of childhood. None of these are insect borne in the ordinary meaning of this term. Contact in these diseases accounts for a minimum of the cases, and as such is accidental or occupational. The maximum incidence of these diseases is in the hot months in the Temperate Zone, due to the influence of heat upon the growth of their causative organisms in media outside the human host. These, with certain insect borne diseases, are the only ones which show a high Summer incidence—poliomyelitis for the moment being excepted. Three other diseases of this group are diphtheria, scarlet fever and tuberculosis. In these there is no insect vector involved. Foods are often associated with sharp outbreaks of diphtheria and scarlet fever, while some cases of tuberculosis are definitely associated with milk from tuberculous cows. It is customary to attribute by far the larger portion of the spread of these three diseases to personal "contact." The chronic nature of tuberculosis makes comment on its seasonal relations of no account. Certainly there is no high Summer incidence. In diphtheria and scarlet fever, however, where there is believed to be a very large element of "contact," there is no evidence of a high Summer incidence as an outstanding characteristic. In fact, the reverse is more nearly true. The outbreaks of these two diseases due to infected foods, however, are usually of Summer origin.

The group of diseases next to be considered, the last group, holds no element of personal contact in present day beliefs. Not many years ago students of some of them could cite definite instances of contact both near and remote. These observers were intelligent, sincere and entirely convinced that yellow fever and bubonic plague were transferred directly from person to person. Besides yellow fever and bubonic plague, the diseases here referred to are: malarial fever, dengue fever, trench fever, relapsing fever, filariasis, trypanosomiasis, leishmaniasis, tularemia, the typhus fevers (including Brill's disease, Rocky Mountain spotted fever, and those sporadic cases in the Eastern United States transmitted by fleas), pappataci fever and infective jaundice. All of these are spread from one human host or animal host to other human hosts by insects of various species, although the last named is not usually considered to be so transferred. Infective jaundice, apparently a variation of yellow fever found both in hot and cold countries, is supposedly transferred through foods infected by the urine of rats which have this disease. The seasonal distribution in the colder countries corresponds to the "flea season," and it seems more logical to assume that it is spread by the bite of a rat flea than through the urine of the rat. For this reason it is included in this group. The maximum incidence of infective jaundice in the Northern United States is in the Summer and early Fall. Yet, contact of persons is not here considered in the explanation of its spread,—rather, as stated, a food transference of the spirochaete from rat to man. The diseases in this group show a seasonal maximum in the Temperate Zone exactly as do their insect vectors. They are present in any locality only as these vectors may be present, and as these may have access to infected animals or men in communities where there are susceptible persons. Some of these diseases do not occur in the Temperate Zone. The typhus fevers may—or must—have a higher warm weather incidence if the insect vector is the flea or the tick. If the louse is involved, a cold weather maximum may be expected because of heavier louse infestation of certain types of persons in a season where habits of cleanliness are difficult to practice because of the cold. So with louse borne relapsing fever. The diseases in this group which always attain their highest maximum in the United States in the late Summer and Fall are yellow fever, bubonic plague, malarial fever, tularemia, dengue fever, pappataci fever, filariasis and infective jaundice. They attain this maximum because their insect vectors attain their maximum numbers at this same Season. There are here seen diseases which are essentially of the warmer months. There is no Winter incidence, unless in bubonic plague, in those warmer sections of the United States where the flea may not disappear or reach its innocuous minimum. There is no "contact" of consequence even though persons may become infected through handling cultures or diseased animals.

There has been given this brief summary of the usual methods of transmission of the com-

municable (infectious, parasitic) diseases of man, with especial reference to the matter of "contact" as it was involved in each disease or in each of several groups. The statements set forth are so elemental as to suggest the propriety of an apology at this place. It is, however, not possible to discuss the matter of the spread of poliomyelitis without having these facts clearly and freshly in mind. What has been brought out very definitely in the above review is the well known fact that contact diseases are not warm weather diseases; and the converse of this—that warm weather diseases are not spread by contact except as this may be accidental or occupational. Apparently this review furnishes a strong reason for doubting the "contact" theory of the spread of poliomyelitis. The outstanding fact in the epidemiology of poliomyelitis is its high incidence in August and September. This is not occasional but well nigh universal. It is in no way comparable to the infrequent Summer outbreaks of such actual "contact" diseases as whooping cough and measles. In fact, no disease of man shows a more definite and consistent seasonal maximum than does poliomyelitis. Next to its seasonal incidence the most striking fact in the epidemiology of poliomyelitis is the age incidence—principally in children under fifteen years. This is the school age, and infancy. A glance at the relation of this disease to schools is interesting and presents a convincing argument against placing it in the "contact" group. Schools end their terms in June and reopen in middle September. Poliomyelitis usually makes its appearance in July and increases until middle September. The beginning of the decline of nearly all outbreaks is coincidental with the opening of schools. In epidemic years when it is thought necessary to delay the Autumn sessions, a decrease in cases as the Fall advances is often attributed to administrative measures advising against the congregating of people. Yet there are many years with a few cases in evidence where schools begin at the appointed time. Here, too, there is seen that gradual disappearance of the disease. There is no spread, as should be expected if the disease were contagious. It is most difficult to believe that a disease which is contagious and which is confined largely to children of school age, could begin its upward trend shortly after the June closing of schools and begin its decline almost exactly at the date of their Fall reopening.

Another reason for disbelieving the contact theory in poliomyelitis is found in its family and community incidence. In these as in its seasonal incidence, this disease closely resembles typhoid fever. It resembles typhoid even in showing an occasional Winter case, or small outbreaks. In poliomyelitis there is not often found more than one case in a family. In this, the disease resembles not only typhoid fever but also the insect borne diseases—certainly, it in no way presents the same family and community incidence as do those typically contagious diseases represented by measles. An opinion which, as the above, carries a belief in the relative rarity of this affection, will not be received with sympathy at this time.

More and more the opinion prevails that the known cases of poliomyelitis in an outbreak of this disease represent only a fraction of those actually occurring. Four cases of "infantile paralysis" will be said to indicate a possible total of forty cases of poliomyelitis. Only one known patient in a family of six children may seem to many an indication of lack of contagiousness. Acceptance of the belief that the other five have at the same time had unrecognizable attacks, may on the contrary be held to indicate a high degree of contagiousness. In water borne epidemics of typhoid fever, a relatively small percentage of exposed persons contract the disease. In milk borne outbreaks the percentage is much higher. In an instance coming under the observation of the writer, ten members of a family of twelve were ill at the same time from typhoid fever contracted through drinking milk infected by the convalescent mother. Only a boy of ten years escaped the disease. In Asiatic cholera, the incidence from drinking infected water is markedly greater than in typhoid fever. This was shown in the Hamburg epidemic, where as many as one thousand cases of cholera were reported daily at the height of the outbreak. Considering this comparison of water borne typhoid fever with the milk borne epidemics and with cholera, account must be taken of the ease or difficulty with which infections may be contracted. In typhoid fever nearly all persons are susceptible, but the disease is not inaugurated until the parasite establishes itself in the lymphoid tissue of the intestinal wall. This tissue being beneath the epithelial lining, there are many difficulties in the way of the parasite attaining its desired goal. This is especially so in the case of infected water

where the bacilli are relatively few. The laws of chance here operate in favor of the host against the parasite. With infected milk—a pure culture of the bacillus—the chances of the bacillus are greatly improved. In cholera, the chances are with the vibrio. To be swallowed by the host is to land in an environment ready made for its life and multiplication. The intestinal contents soon become a pure cholera culture and the disease is inaugurated forthwith. Nothing is known of the parasite of poliomyelitis. Assuming a universal susceptibility to the disease and an implantation of the parasite as easy as, or easier than in the case of cholera, infection of all exposed persons may as readily be due to food or drink as to "contact." Admitting that all exposed susceptible children contract poliomyelitis in either a mild or severe form, one need not thus accept "contact" as an explanation of the phenomenon. The same need to explain the seasonal incidence remains, however, whether direct or indirect transfer of the parasite occurs. The determination of the occurrence of mild or missed cases in an outbreak is only of academic importance when the matter of the seasonal incidence of poliomyelitis is considered. The belief that poliomyelitis *must* be a contact disease because the virus is found in the nose and throat of "cases" and carriers and can thence be transferred to certain lower animals, is not convincing. The parasite may be on these mucous membranes and yet require to be "inoculated" before the disease is inaugurated. In fact, such a procedure seems to be necessary in infecting monkeys in laboratory experiments. These animals do not seem to contract poliomyelitis merely by "contact." Evidence has not been set forth showing that all monkeys in any laboratory acquire an immunity to poliomyelitis through mild or missed cases after one of their number is infected by means of inoculation through its nasal mucosa. The parasite of this disease has lately been demonstrated in the intestinal tract, and certainly, at times, it reaches such inaccessible tissues as the spinal cord. So little is known of the "viruses" and the manner in which they attain their desired goals in human hosts that it is not well to be dogmatic upon a "contact" explanation based on their presence upon exposed skin or mucous surfaces. Further evidence that poliomyelitis is not contagious is the absence of the disease in laboratory workers. To state that all adults are immune is, in the absence of proof of immunity, to beg the question. Apparently, the chief evidence in favor of the "contact" theory is experimental. Observation and reason point definitely away from this method of spread.

Having set forth reasons to show that poliomyelitis is probably not a "contact" disease, brief mention may be made of its possible relations to food or to insects. As stated, this disease in many ways resembles typhoid fever. Seasonally, it resembles typhoid and the dysenteries—bacillary and amebic—in the Temperate Zones. Typhoid fever and the dysenteries prevail here in the warm months and are widespread in the Tropics. Poliomyelitis becomes rarer the nearer the Equator is approached. In this it differs sharply from the intestinal diseases just mentioned. This infrequency of poliomyelitis in the warmer countries of the world is an interesting phenomenon. Reference to the diseases mentioned herein as of high Summer incidence in the Temperate Zone will show all of them to be either essentially tropical in their nature, or if occurring in the Summer months here, they may be widespread in the Tropics and found there at all seasons. Poliomyelitis shows a high Summer and early Fall incidence in the Temperate Zone, and a practical absence in the Tropics, being thus different from all others of its class in this respect. Search for a connection between this rarity of poliomyelitis in the Tropics and its relation to food reveals only one probable link. All other diseases of high Summer incidence in the Temperate Zone are spread either by insects or by food. And all those of the food borne class, except Malta fever, may be spread through the agency of water. If poliomyelitis were water borne, it should be more prevalent in the warmer than in the colder countries. If, however, it should be milk borne, an explanation of its decrease toward the Equator may be at hand. Poliomyelitis and the use of cow's milk decrease *pari passu* as one approaches the Tropics. Malta fever exists in semi-Tropical regions where goats' milk is used, but is not more widespread than the use of milk would allow.

Attention may be invited to another food besides milk, often used in a partially raw state. This is the egg, and its use is more general in the warmer months of the year. Fowls suffer from nervous system diseases, and the connection between these and the poliomyelitis of the human has often been studied.

Fowls are known to harbor parasites of the spirochaete variety, and these no doubt are more prevalent in the warmer months. Other raw foods—fruits, vegetables, oysters, etc., may be considered, but the season of the year and the youthful status of most patients must be taken into account when these are considered in possible relationship to poliomyelitis. They will no doubt be ruled out as factors in the spread of this disease. The possible relation of insects to the spread of poliomyelitis may be briefly intimated. There are undoubtedly Winter cases of this disease. The extremely cold Winter weather of certain Northern countries should definitely rule out the fly, the mosquito and the tick. The bedbug and the louse are not predominantly Summer insects, and the status of many families affected make it difficult to think these insects are possible vectors. There remains the flea to consider. Common knowledge as well as flea surveys made by officers of the U. S. Public Health Service place the season of maximum incidence of fleas in the Northern United States in August and September. In October there is a falling off in numbers but there is not an entire disappearance of these insects in the Winter. In New York City the average Winter count of rat fleas was forty-eight fleas per hundred rats. It must be that in certain protected places they are more numerous. Should it develop that the flea transmits poliomyelitis, the occasional Winter presence of this insect would accord with the occasional Winter case of the disease. The presence of rats, cats or dogs—or all of these animals—in a home is not unusual, and children rarely complain of flea bites as they do of the stings of mosquitoes. A rat-flea explanation of the transmission of poliomyelitis makes more understandable the fact that the disease may be confined chiefly to certain sections of a city, as recently in Philadelphia. No large city is ever equally infested by rats in all sections. Acceptance of the flea theory of transmission tends to confirm a belief that the family and community incidence of poliomyelitis is as it appears to be rather than a widespread, mild affection with occasional spinal cord involvement. In any outbreak of the insect borne diseases, especially those related to fleas, the percentage of susceptible persons acquiring the infection is relatively small. The rather rapid decline of a poliomyelitis outbreak in October and November is somewhat more suggestive of a flea association than of a connection with foods. The manner of transmitting this infection to laboratory animals is reminiscent of inoculation by an insect vector. Recent work of the Public Health Service has shown that certain heretofore indeterminate fevers of the Southeastern United States are a variety of typhus fever contracted through the bite of fleas. The writer in this article suggests that the infective jaundice which is occasionally seen in this country is transmitted from the infected rat to man through the bite of the rat-flea. Bubonic plague, as it occasionally occurs in the warmer sections of the United States, is of course of flea origin. Thus, the virus of typhus, the bacillus of plague, and the spirochaete of infective jaundice—three forms of the parasites of man—are transmitted by this insect. To believe the virus of poliomyelitis is spread by the flea is not beyond the realm of the reasonable. No convincing suggestion is at hand as to why the more abundant fleas of warmer countries are not there associated with poliomyelitis—perhaps because the Xenopsylla cheopis does not transmit the disease, or because the rats of warmer countries do not harbor the parasite of poliomyelitis.

Several years ago a paper was submitted to certain workers in this field embodying some of the thoughts set forth above. In due time the paper was returned with comments. The writer was stated to have ignored the large body of experimental work that had been done upon the subject of poliomyelitis. This was in a way correct. That the virus of the disease could be transferred from man to certain lower animals, and through those lower animals preserved indefinitely; that the causative agent had possibly been grown as the "globoid bodies"; that mild cases and carriers had presumably been detected, and that the serum of recovered persons had been thought by some to be curative—were well known and held as of some importance. However, it was also recognized that in spite of these discoveries this disease came and went as of old. No one knew whence it came, or why it went, and nothing can yet be done to control it. That the virus is abiding for a time in certain laboratories is of little consequence. The art of the research worker has evolved certain facts and produced certain results. But this is art. It is nature that confronts the practitioner of medicine and the parents of the victims of poliomyelitis. Nature has made this a

disease of Summer, and in so doing has probably not reversed her usual orderly processes. If this were a "contact" disease, nature would have remained logical and the high incidence would, no doubt, have been in the colder months. There is a definite reason for this seasonal incidence of poliomyelitis and this is most probably not explained by "contact." It is possible that the writer wishes it to be proved that poliomyelitis is not spread by contact; this, because of the fact that food borne and insect borne diseases are largely controllable, while the "contact" diseases are, with the exception of smallpox, almost entirely beyond the control of man. It seems that as the years pass epidemiologists and administrative officers in this field center their attention more and more upon "contact." Advice at times of increase in poliomyelitis has to do almost altogether with the avoidance of "contact." It is believed that equally as much stress should be laid upon avoiding raw foods and upon protection against all known insect vectors of disease. The relatively short season of high poliomyelitis incidence would make the use of boiled foods no great hardship; and an intensive campaign against insects would seem financially justifiable under the existing uncertainty as to the mode of spread of poliomyelitis. Certainly, its distressing after-effects make all possible measures of control of great importance. It is felt that a too concentrated view of "contact" may have resulted in the neglect of other promising fields of administrative and investigative endeavor.

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## SOME ESSENTIALS IN THE PRE-OPERATIVE AND POST-OPERATIVE TREATMENT IN EXODONTIA.*

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The practice of exodontia is a surgical procedure which is now generally recognized. The fundamental principles involved in general surgery are equally applicable in the successful practice of exodontia. The removal of teeth constitutes a surgical practice and one which is performed, perhaps, more frequently than any other surgical operation. In spite of the universal practice of exodontia and the possible unfavorable sequelae which may arise, it is gratifying that only a small percentage of cases give rise to complications. This does not mean, however, that we can minimize the responsibilities involved, for the utmost care in the treatment of every case must be exercised.

We may assume that from time immemorial man has been subject, more or less, to diseases of the mouth which have made necessary the removal of teeth. It is during the past fifty years or so that the greatest progress has been made in this field. The improvements which have effected these changes are the administration of anesthetics, both local and general; the use of the roentgenogram, the principles of asepsis, and the perfection of surgical technic. The advances made in surgical procedures have been materially enhanced by the vast improvement made in the construction of instruments.

### Pre-Operative Considerations

The mouth in general is not the most favorable field for surgical intervention. Because of the various anomalies and uncertainties which may be encountered, it is essential that a thorough diagnosis be made as a pre-requisite pre-operative consideration. This should include clinical and X-ray examinations of the field of operation. Visually, one should observe the stability of the tooth or teeth to be removed, as well as that of the adjacent teeth. All unattached appliances in the mouth should be removed. The roentgenogram will reveal pathologic changes and the extent of involvement, as well as the size and curvature of the roots of teeth.

The oral cavity is constantly infested with micro-organisms, and, because of this, a feeling exists among some practitioners that the mouth cannot be rendered sterile. It is impossible to sterilize or maintain sterility in the oral cavity for any length of time. Certainly a reduction in surface bacteria may be accomplished, and all means at our disposal should be used to cleanse the mouth in general before any operative intervention. General spraying of the mouth with a mild antiseptic solution and swabbing of the teeth and gums will do much to remove gross septic material so frequently found deposited about the teeth. Calculus and other debris in the field of operation must be removed.

In cases of acute infections, such as in ulcero-membranous gingivitis, remedial measures should be instituted to minimize the infection

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before operating. In such instances, vigorous cleansing with hydrogen peroxide and with solutions of sodium perborate will tend materialy to allay the acute symptoms.

Another complication frequently met with is infections associated with erupting and impacted third molars. These cases are often accompanied by trismus. Thorough cleansing of the oral cavity and the application of heat externally should be instituted. As far as it is practical, surgical intervention should be deferred until the infection is well under control. In every case the operative field must be cleansed and strict asepsis must be observed to guard against carrying extraneous infection.

In discussing the pre-operative care in exodontia, it is assumed that the practitioner has taken into consideration the general health and welfare of the patient. It has also been determined whether or not extraction is indicated and if the patient can withstand the shock of operation. It is not presumed that the dentist is to make a complete physical diagnosis, but a few well prepared questions may elicit enough information to determine whether a physician should be consulted in the case. Proper consultation and cooperation with our medical confreres will arouse added confidence on the part of the patient.

### Post-Operative Considerations

It is easy enough to say that with proper preliminary care and with the employment of all the refinements of surgical technic, we should have little or no post-operative complications. The fact remains, that all pre-operative treatment is instituted to diminish and prevent, as far as possible, the need for post-operative care. This after-care, however, is a necessary part of the treatment of the case, and is essential for a satisfactory prognosis.

Post-operative care may be divided into two two main divisions: local and general.[1] Local post-operative treatment of mouth wounds should consist of simple non-traumatizing procedures. Advise the patient not to wash or rinse the mouth for at least the first twelve hours. This may be more indelibly impressed immediately after the operation has been completed by not permitting the patient to wash his mouth while in the office. Explain to him that the less the wound is disturbed by too vigorous washing, which often causes the loss of the blood clot, the less bleeding there will be, and therefore the quicker and more complete the recovery. It is to be observed in this connection that in those patients with a diminished flow of saliva, the wounds heal more readily, while it seems that in cases of aptyalism the results are even more favorable. When excessive saliva apparently interferes with healing, atropin may be advisedly used to advantage. As a rule, the external application of ice compresses is ordered not only for relief of pain, but also because the cold tends to lessen edema and allays the inflammation, thereby reducing the heat necessary for the proliferation of bacteria. In cases where suppuration or extensive inflammation is already present, the application of heat is preferable. There should be no further local attention to the wound itself after the operation has been completed, unless this is warranted by complications which arise and require it.

Under general care, the patient should be advised to rest the operative field as far as it is practicable, while general rest of the patient is likewise conducive to hastening recovery. Laxatives may be prescribed in order to facilitate proper elimination. A light diet, with more than the normal amount of fluid intake, is advised. For the relief of pain, sedatives are prescribed. Milder remedies are, of course, first used; if these do not suffice, hypnotics may be necessary. There are many drugs available, and the operator should use those which seem to serve his purposes best.

Regardless of the simplicity or gravity of the operation, the patient should be seen on the first, second or third day, this depending on the nature of the case,—if not for treatment, at least for observation. If the wound looks satisfactory, nothing is done to disturb the healing process. Gentle spraying of the surface of the wound with a mild antiseptic is permissible. The use of a counter-irritant on the adjacent tissues, if indicated, is not objectionable. The practice of continually disturbing a wound with instrumentation or with strong drugs cannot be too severely condemned. Later, when satisfactory healing is apparent, the patient may use a mouth wash for its cleansing effect, and, I might add, for its psychic effect. As washes are countless, there will be no difficulty in appeasing the whims and fancies of the most exacting dentist and fastidious patient.

How. now, are we to treat the perverse wounds, wounds that do not heal properly?

We all know that, in spite of the strictest observance of asepsis and adherence to the fundamental principles of surgical technic, and with traumatism reduced to a minimum, we still have wounds that break down and are annoying to both patient and operator. This is usually accompanied by persistence of pain and local inflammation. This condition, or the so-called "dry socket," is sometimes due to the use of hydrogen peroxide. In my opinion, this drug is not indicated as a post-operative wash, since it acts as a blood-clot solvent.

The condition of delayed healing having developed, we must meet the situation with proper treatment. Cautious irrigation of the wound with mild antiseptics is carried out to dislodge any debris that may have been retained within the confines of the operative field. Useless granulation tissue should be removed, and the application of a gauze dressing with sedative drugs will, in most cases, afford relief. The dressing is changed as often as conditions require until sound healing has again been resumed. At this stage of the case, the application of heat externally usually affords the greater comfort.

When post-operative treatment is complicated by general bodily disturbances, the problem looms larger and demands more exacting consideration. For instance, prolonged bleeding, as found in hemophilia, is a subject which might in itself occupy the space and time of another paper. Suffice it to say that, in known cases of hemorrhagic diathesis, constitutional treatment, under the care and with the co-operation of the patient's physician, is instituted before attempting any surgical operation. Mere superficial bleeding may be arrested by placing some gauze over the orifice of the wound and having the patient keep the jaws closed over it for from fifteen to twenty minutes. If bleeding is somewhat more persistent, firm packing of the sockets with gauze will often be sufficient. If the bleeding is from a part of the alveolar process and the field can be readily approached, it may be checked by crushing the bone at this point with a blunt instrument. Suturing of the wound will be of material aid. These methods are tried before resorting to the use of drugs, the majority of which have a deleterious effect on the supporting and adjacent tissues. When bleeding is prolonged and becomes alarming, a combination of all of these forms of treatment must be employed. The administration of morphin and atropin is a valuable adjuvant in the treatment of hemorrhage.

### Conclusion

Every case should receive the same careful attention in pre-operative and post-operative treatment as in the performance of the operation itself,—care which is not to be relaxed until the operator is satisfied and the patient discharged. We must not forget that there is more to be considered for the benefit of the patient than the mouth into which we daily peer with so much concern and interest. A few minutes of explanation in simple, non-technical terms, instructing the patient in what you expect of him, will add materially to the chances of recovery. Constant diligence and intelligent attention must be exercised in the treatment of cases from the beginning to the end.

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*Professional Building.*

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## THE PRESENT STATUS OF MALARIAL THERAPY IN GENERAL PARALYSIS.*

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By way of apology for presenting to this group a subject which may be of special rather than of general interest, I will say that we have recently used this treatment with success on two patients at Friends' Hospital. Further, a procedure whose discovery and subsequent development brought to its author the Nobel Prize for Medicine cannot be without interest to doctors in general.

In 1917, Wagner Jauregg, of Vienna, inoculated with malaria nine cases of general paralysis, variously called paresis, dementia paralytica, and general paralysis of the insane. Three of these were at work four years afterward and showed no sign of the disease. After treating and following up for several years a large series of cases, Wagner Jauregg's results were sufficient to obtain for him, in 1927, the Nobel Prize for Medicine. From Jauregg's clinic in Vienna Gerstmann reported 400 cases treated, with 33 per cent recovered and 14.25 per cent improved.

The treatment was subsequently taken up rapidly and with enthusiasm—enthusiasm, pos-

*Read before the Northeast Branch of the Philadelphia County Medical Society, at Frankford Hospital, April 7, 1933.

sibly to some extent due to the hitherto gloomy outlook presented by the treatment of general paralysis. Kirby, at the New York Psychiatric Clinic, reported 156 male paretics treated, with 33 per cent full recoveries and 17 per cent improved; Kirschbaum, of Hamburg, 196 patients, with 31 per cent complete and 21 per cent moderate remissions; Caldwell, in London, with 579 patients had 29.7 per cent complete remissions and 13.9 per cent of patients improved.

The selection of the patient is perhaps the most important single factor in securing favorable results from this form of therapy. Selection of a pure strain of tertian malaria is also important, as certain strains are accompanied by high mortality.

In the United States infection has been accomplished either by intravenous or subcutaneous injection of blood from an individual having paroxysms and showing the parasite in the blood. In England infected mosquitoes have been used. The method of injection by syringe is much more certain and is more easily controlled. The quantity of blood used is from two to four c.c. It is taken directly from the veins in the ante-cubital space and injected immediately into the recipient subcutaneously or intravenously. I have once used citrated blood, transported from New York City to Williamsburg, Virginia, a distance of approximately 400 miles, and produced a successful inoculation. The incubation period varies, according to Henderson, from three days to four weeks in the subcutaneous, and from two to twenty days in the intravenous route. Our own last case went fifteen days from day of injection to the first elevation of temperature. He was injected by the subcutaneous route.

The bouts of pyrexia reach 104 degrees Farenheit or higher. The number of paroxysms the patient is allowed to have varies from eight to sixteen, according to the reaction of the patient; twelve or fourteen being a good average. It is doubtful if less than eight would have any permanent influence on the course of the paresis. Here it may be proper to interject that this treatment should never be attempted except in a hospital where skilful nursing care is available.

We have given our own cases fifteen minims of tincture of digitalis three times a day throughout the period of the paroxysms. This has at times been increased to thirty minims when necessary to support a falling systolic pressure. Our criteria for terminating the treatment have been: the general condition of the patient, the blood pressure (particularly a rapidly falling diastolic), and a hemoglobin lowered beyond 60 per cent.

The blood pressure is taken routinely twice a day, and, if falling, every four hours. If the diastolic pressure continues to fall after the patient comes out of the paroxysm, it is wiser to terminate the treatment. The blood pressure, both systolic and diastolic, naturally falls during the algid stage. If it does not rise again when the patient should react, it is a definite danger sign. A hemoglobin of 50 per cent is sufficient ground for terminating the treatment forthwith. The extent of infestation of the red cells as shown in stained blood films is also a criterion which can be used.

Treatment is terminated by giving quinine sulphate, gr. x t.i.d., for one week. Ordinarily after the patient has had his course of quinine and begins to build up again, it is wise to follow the quinine with tryparsamide, grammes three, in ten c.c. of distilled water intravenously. This treatment is given at weekly intervals for eight doses. The eye grounds and visual fields should be examined by an ophthalmologist before this is begun and should be reexamined after every two injections, and the urine should be checked.

The mortality of malarial therapy in paresis is put by Kirby at 10 per cent. Other observers give 11 per cent, or 12 per cent, or figures closely approximating. It is safe to assume it at 11 per cent. Untreated paretics in institutions have an annual death rate of 33 per cent.

The earlier, after symptoms appear, that the treatment is instituted, the more promising the outlook. The clinical type affects the prognosis. The most hopeful are the maniacal and grandiose; the least hopeful the dementing types. As to the efficacy of early treatment, Nicol states that in cases in which malaria therapy was instituted six months after symptoms ten times as many remissions were obtained as in those in which it was deferred until eighteen months after symptoms. It is, of course, often difficult to say just when the symptoms of general paralysis begin. The history is most frequently defective, and the onset of the disease usually insidious. In contrast to plain cerebral syphilis, one observer has expressed it "Paralysis glides in; cerebral syphilis jumps in." The exact diagnosis is to be made by the close correlation of the physical

signs and symptoms with the serological findings. Finding a positive Wassermann on the cerebro-spinal fluid does not necessarily mean general paralysis.

The four clinical types of general paralysis usually described are: (a) grandiose, (b) maniacal, (c) depressed, (d) simple dementing. As has been said, the greatest number of recoveries are in the maniacal, agitated and grandiose types, the least in the simple dementing. A point I think proper to stress here is that a convulsion is often the symptom that ushers a case of general paralysis on the hospital stage. An epileptiform seizure occurring for the first time in an individual over thirty-five years of age should lead one to think of syphilis and of cerebral arteriosclerosis.

Following malarial therapy, improvement should be noted within three months, and, unless present within nine months, will not occur. According to Nicol, four species of malaria have been employed: plasmodium vivax (benign tertian), plasmodium malariae (quartan), plasmodium falciparum (malignant tertian, aestivo-autumnal), and more recently plasmodium ovale. Benign tertian is used in the larger number of cases. Malignant tertian is used, as a rule, only when a second inoculation is given. Quartan, owing to the longer interval between paroxysms, does not produce the prostration the tertian does and is preferred for use in older and debilitated people should they be inoculated. Plasmodium ovale is mild and has a tendency to recover spontaneously. Our own cases have been inoculated with tertian, which I obtained at Harrisburg, Pennsylvania, from my friends, Drs. E. M. Green and R. J. Ridgeway. To Dr. Ridgeway I am indebted for much good counsel in handling our cases.

Transitory hallucinations have been observed following malarial treatment. They have occasionally appeared following the administering of quinine or injection of salvarsan when the malaria is terminated. It is possible they are due to one or the other of these drugs. Their appearance is rare and they usually disappear quickly.

A safety device in the management of malarial therapy is the interruption of the paroxysms with a single dose of quinine, five grains. This procedure has much favor with the Vienna workers.

Change in the serological findings is not at all concomitant with improvement clinically. There is usually no change in the Wassermann, or colloidal gold curve of the spinal fluid within three months after treatment. About two years after completion of the treatment 50 per cent of patients have negative Wassermann tests on the spinal fluid and a normal cell count. Thirty-three and one-third per cent will have a normal colloidal gold curve. If the malaria is followed by a course of arsenicals, the blood Wassermann may become negative. There is little or no change in the physical signs. Pupillary changes and reflex phenomena are not affected. The improvement is therefore almost entirely clinical and is accompanied by marked improvement in the patient's general condition. In those patients in whom there is little mental improvement and who remain in the hospital, there is such marked improvement in their general condition that they are much less prone to infections, bed sores, slow healing wounds, etc.

The spinal fluid Wassermann in one of our own cases was still positive after the patient had been out of the hospital over three months. The blood serum still gave a positive Wassermann six months after the treatment was completed. The other case left the hospital before a three-month period was up, and so far I have been unable to get his fluid.

Reid, of England, has excellent statistics on malaria-treated paretics extending over a period of eight years. His series of 225 cases is large enough to enable one to make deductions and draw conclusions. After five years had elapsed following the discharge from the hospital, 24 per cent were remaining at home, well. The same percentage was able to work. Their occupations ranged from railroad engineering, laboring, through French polishing and painting. In the period from six to nine years after leaving the hospital 12 per cent of those treated were well and living at home. As to expectancy of life of Reid's malaria-treated paretics, 76 per cent were living at the end of one year and 22 per cent at the end of nine years. One has but to contrast this with the statements in textbooks of twenty years ago, as to the expectancy of life. It was then usually given as from three to five years.

We have to confess that this treatment is based almost entirely on empirical knowledge. T. D. Power states, "The treatment of diseased conditions by means of induced pyrexia is now so frequently carried out that it is surprising how little we know of the biological

processes involved. It is not an exaggeration to state that the beneficial effects of malaria in general paralysis are as gratifying as those of liver in pernicious anemia, and insulin in diabetes, but we still wait a satisfactory explanation of its mode of action. An attempt in this direction was made by Eddison, who observed a failure of leucopoiesis in untreated cases of paralytic dementia which he attributed to degeneration in reticulo-endothelial system. He considered that 'in general pyrexia was associated with leucocytic reaction and this resulted indirectly in reticulo-endothelial stimulation.' "

The inference in Power's paper is that some of the good results observed in malarial therapy are due to the anemia produced. This anemia calls forth from the blood-forming organs more primitive and protective mechanisms than are ordinarily needed to protect the body under conditions of normal life, but which may be necessary when the patient has such a disease as general paralysis. Although the exact mode of the production of the good results in this form of treatment is not known, the good results themselves can no longer be questioned.

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## CARCINOGENESIS—A LINE OF RESEARCH.

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We first came to link the problem of carcinogenesis with the phenomenon of radioactivity about 1902. I was at that time associated with the late Dr. Ennion G. Williams. We speculated on certain physiological similarities existing between embryonal and malignant tissue, and also noted the closely related susceptibility of these two types of tissue to X-ray. In 1911 I attempted to interpret in terms of electrical parlance, terms to which we were limited in those days, the so-called electronic nature of malignant tissue, and pointed out the hypothesis that a malignant cell may be an outlawed reversion of a chronically irritated cell to its embryonic prototype, and that this reversion may be *via* a process involving the complex phenomenon of senescence. A chronically irritated cell is a cell unremittingly outraged, which eventually develops into an enraged unit. This enraged unit is probably the product of numerous generations of outraged cells. Then, dependent either on factors favorable to the development of disorganized cellular growth, or on an absence of factors responsible for the inhibition of disorganized growth, the enraged cells set up a new structure composed of their own elements with all their inherent and potential properties for independent and parasitical existence.

In 1908 and 1909 Prof. Lazarus-Barlow, at the Cancer Research Laboratories of the Middlesex Hospital, carried out a series of extensive researches to determine the presence and the relative degree of radioactivity in normal and malignant tissue by the electrolytic leak method. His work proved conclusively the presence of radioactivity in all animal tissues, with varying degrees of increased radioactivity in malignant tissue as compared with the normal.

During the years 1920 and 1925 I conducted independently a number of experiments which demonstrated the electric potential of various tissues. My set-up consisted of a series of rectangular glass jars, in size and capacity as nearly equal to each other as it was possible for me to get. Each jar had two opposite inner surfaces lined with pure sheet zinc. These zinc plates were connected directly to a sensitive galvanometer. Double distilled water was found to have an electrolytic action sufficiently near to zero to make it the medium in which the various tissues to be tested were mixed. All the factors involved were checked and kept as nearly equal as possible. The quantity of material tested consisted uniformly of distilled water 100 c.c. and tissue to be tested 10 grms. The whole was macerated in the electrolytic jar with a glass rod. A number of chemical substances of varying strengths in 100 c.c. of distilled water were tested in the same way.

One peculiar fact was invariably noted: certain chemicals in solution exhibited a variable polarity while certain other chemicals in solution showed a constant polarity. It was found that salts of the radioactive elements gave a galvanometric reading of a constant polarity. The same was true of solutions of all animal tissues that were tested. Such salts as sodium chloride and sodium citrate would register inconstantly from one polarity to another within

the course of a few minutes. The radioactive salts used were those of thorium, uranium and potassium.

The potassium which appears to be directly concerned with rapidly growing tumors is probably an isotopic element. It has been shown by Beebe and Clowes and spoken of by Kotzareff that there is an excess of potassium and a deficiency of calcium in rapidly growing tumors free from necrosis. Crile has demonstrated the increased electric conductivity of malignant tissue as compared with the normal tissue of the same organ in which the malignancy occurred.

In the experiments previously referred to, no extraneous electric current was employed. The reactions were created by using two plates of similar metal which were ionized by the tissue and other solutions acting as electrolytes.

The following chart summarizes the result of several hundred experiments. The galvanometer scale was marked off on either side of zero in sections A, B, C, D. Each section was ten inches in width, which was further subdivided in sections one-quarter inch in width. The excursions of the galvanometer were magnified by a series of reflecting mirrors.

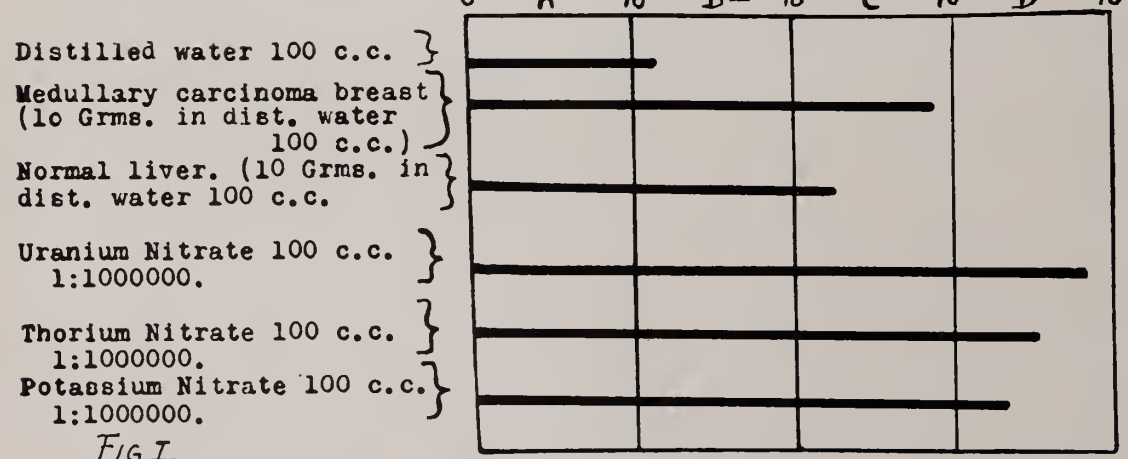


FIG. I.

Comparison of electric potential of normal and malignant tissue with known strength or radioactive substances.

Sampson Handley has repeatedly called attention to the association of lymph stasis with carcinogenesis. That carcinomas metastasize by lymphatic permeation is a significant fact. It has been definitely established that a papilloma or an adenoma is a frequent precursor of a malignant neoplasm, and that a chronic inflammatory condition is the soil from which spring the papillomas and adenomas. Wherever there is a chronic inflammation, resulting in papillomatous or adenomatous growth, we find dense lymphocytic infiltrations with a stasis of the lymphatic system of the part involved. The production of experimental cancer with coal-tar and coal-tar derivatives point to the same sequence of events. The same is true of all known carcinogenic agents such as:

1. Thermal. — "Kangri." The abdominal cancer of the Kashmiri Indians.
2. Mechanical.—Trauma.
3. Chemical.—Experimental cancer with coal-tar and coal-tar derivatives. The pulmonary lympho-sarcoma of the Schneerberg Cobalt Miners. The chimney sweep's cancer of the scrotum from soot.
4. Parasitic.—Fibiger's gastric cancer in rats caused by the feeding them with cockroaches infected with a nematode worm. Cancer of the bladder due to bilharziasis. Cancer of the tongue following syphilitic leucoplakia.
5. Radioactivity.—X-ray and radium.

The only definitely known radioactive agents which can be classified as true, etiological factors in carcinogenesis are X-ray and radium. It is quite probable, however, that all the agents, whatever they may be, are carcinogenic by virtue of their radioactive content, or possess properties which tend to increase the endogenous radioactive elements of the tissues involved. The effect of prolonged exposure of exogenous radioactivity on tissue is a form of chronic irritation which increases or intensifies the otherwise normally balanced endogenous radioactivity of the tissue cells, frequently to such an extent that they are able to

bombard their neighboring cells with a radioactive charge equal to or greater than the exogenous charge which primarily actuated them. Indeed, we may well wonder, in the light of our present knowledge, of the inseparable relationship of all life and all radiative phenomena, where one ends and the other begins, and if, after all, in the last analysis, one is not merely a stage, a degree, or an expression of the other.

The significance of the blocking of the lymph spaces of a chronic irritation which has led to a papillomatous or an adenomatous growth, lies in the stagnant accumulation of lymphocytes in closest contact with a given cellular structure. The large dense chromatin masses made up of the aggregated lymphocytic nuclei furnish the endogenous radioactive principle with which the immediate cellular neighborhood is continuously bombarded. It is as though there were normally present in the body in constant circulation a definite amount of radium contained in floating cellular units. A condition arises which causes a thrombosed mass of these units to lodge somewhere in the body. The result in that part would be equivalent to the effect produced by the application of a radium salt over a long period of time.

The role played by the lymphocytes in regenerative processes is probably that of a direct stimulation of the cells lining the margins of broken continuity by their endogenous radioactivity. Stagnation of the lymph system involved spells the difference between normal or balanced healing and excessive cellular hyperplasia with the tendency to malignant changes.

Matters for consideration:

1. What organ of internal secretion may be associated with stability of karyokinesis?

2. If there is such a secretion, may it be that it functions mainly through the lymphatic system?

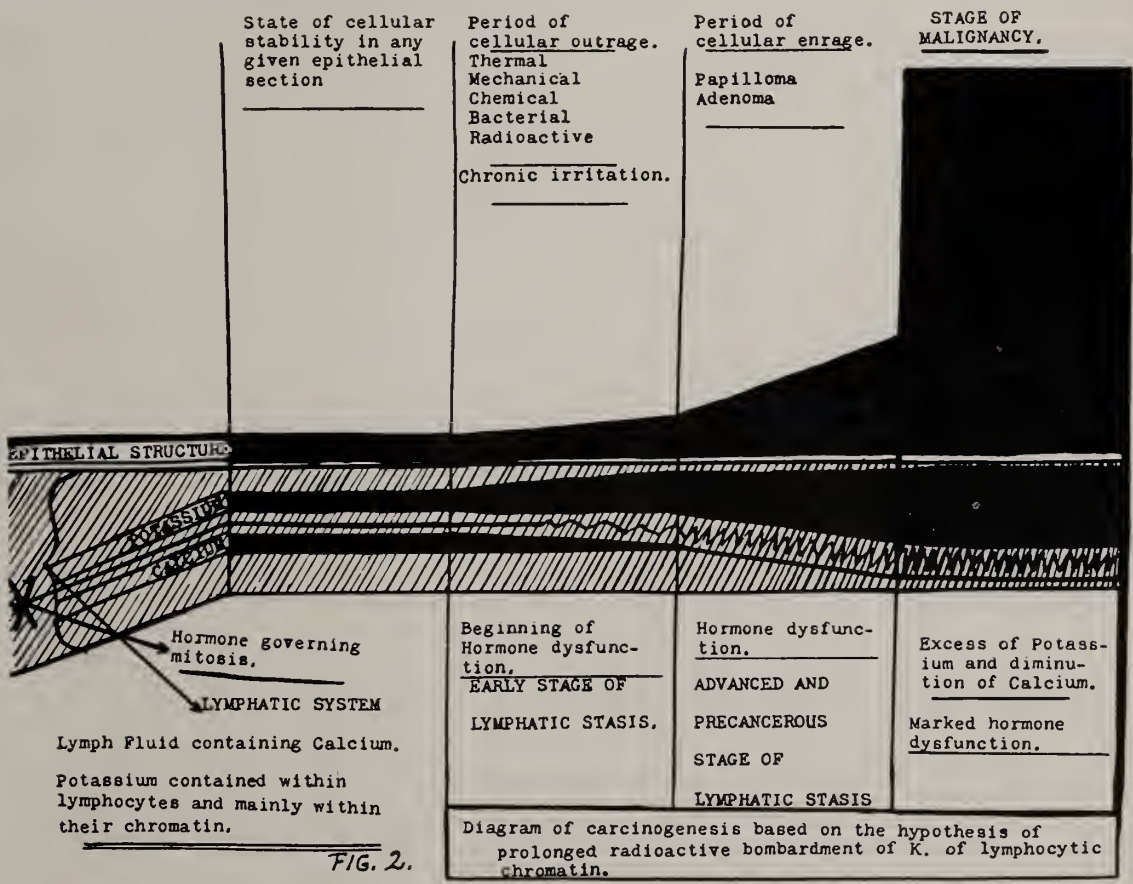


FIG. 2.

Diagram of carcinogenesis based on the hypothesis of prolonged radioactive bombardment of K. of lymphocytic chromatin.

3. On the assumption that there is such a secretion or hormone governing or balancing cellular activity, may it be that prolonged irritation produces a dysfunction of this hormone, and that this dysfunction manifests itself by a stasis of the lymph supply of the part affected?

a. Lymph chemistry.
b. Isolation of lymph chromatin.
c. Isolation of radioactive principle of lymph chromatin.
d. Experimental cancer with lymph chromatin.
e. Specific hormone lymphagogue.
f. The role of the isotope of Potassium in balanced and unbalanced karyokinesis.

Fully aware of the marked preponderance of qualitative over quantitative matter in this paper, nevertheless, sufficient justification for its publication rests mainly on an attempt to hypothesize a rational approach to the problem of carcinogenesis based on the accumulated facts of present-day knowledge, and to indicate a line of research.

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## DIVERTICULITIS.*

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In attempting a discussion of diverticulitis, the historical aspect of the subject will not be entered upon, because this is more or less academic in character. Suffice it to say that diverticula are mentioned in our earliest studies on anatomy because of the frequency with which Meckel's diverticulum has been identified in the routine dissection of the human structure. So frequently is it found that it can with justice be removed from the realm of pathology and placed in the field of normal anatomy. This paper will deal exclusively with diverticulitis as pertains to the intestinal tract.

A diverticulum is a non-neoplastic outpouching of the wall of a hollow viscus, which does or did communicate with the lumen of the organ to which it is attached. Diverticula within themselves are purely inactive and inoffensive, but they are potentially treacherous when they become inflamed, or blocked mechanically, or when they enter into the production of an obstruction; then they become factors of deepest concern.

Diverticula are of two types—congenital and acquired. The congenital type assumes all the identifying characteristics of the organ to which it is attached. It usually has the three coats well defined—mucosa, muscular and serous. The muscular layer may be defective. The acquired diverticula are sacs of mucosa with a peritoneal covering. The muscle is customarily absent entirely. Diverticula are usually attached at or near the mesenteric border of the intestine; often they are wholly within the mesentery and may present the picture of an enlarged lymph node in their physical characteristics. Diverticula found in the small intestinal tract are congenital in the large percentage of cases. Favorite locations are duodenal and ileal. In our series there were two duodenal. Attached to the ileum two to three feet from the ileo-cecal valve we find the classical Meckel's diverticulum, which is the most frequently encountered of all, whether congenital or acquired. This structure varies in shape and size from a fibrous cord to a pouch two or three centimeters in diameter and four to six centimeters in length. It may swing blindly in the abdominal cavity, or it may be attached at its closed end by a band of fibrous tissue to the abdominal wall at or near the umbilicus. It is a remnant of the vitelline duct of embryonic life. This type is customarily attached on the anti-mesenteric border of the intestine. The diverticula of the large intestine are acquired. They are the results of long-standing pressure within the gut being exerted against the wall, causing it to give way at its weakest points. These weak areas are blood vessel apertures and appendices' epiploicae or fatty tags.

Diverticula are symptomless until they become inflamed, or until they become blocked by fecal accumulations, or until they become pockets that predispose to stasis, or until they become factors in the production of a mechanical obstruction, as may occur with a Meckel's variety. Acute diverticulitis may simulate any form of acute abdominal pathology. They ulcerate, become gangrenous, may perforate, or form abscesses, all of which may forerun an obstruction or peritonitis. Diverticulitis of the duodenum may suggest peptic ulcer, cholecystitis, or duodenal dilatation. Diverticulitis of the ileum is always diagnosed appendicitis prior to operation. Symptoms exactly correspond, except that in a diverticulitis the area of tenderness may shift itself, and, if a mass be present, it may be movable and near midline; nevertheless the right iliac fossa is the preferred site. Colic, nausea, vomiting, constipation, temperature, leucocytosis, tenderness, rigidity, a mass, later distention, and an old familiar picture is complete.

Diverticulitis of the colon presents a dif-

*Read before the Medical Association of the Valley of Virginia, at Clifton Forge, Va., May, 1933.

ferent situation. This is a disease of middle or late life. It is at first chronic, later acute. The cecum and sigmoid are the common locations of the acquired diverticulitis. Patients with this condition are often asthenic, debilitated, profoundly constipated, and perpetually complain of some indefinite abdominal discomfort which we are more than likely to consider very trivial. The rigors and pressures of constipation form these sacs and then fill them with faecal debris, and a stasis is imminent and indeed unavoidable. Irritation is inevitable and a resulting inflammation is certain. Acute diverticulitis is the picture again, but presenting fundamentally different characteristics as compared to acute diverticulitis of the small gut. Formerly constipated, these patients now have periods of diarrhea with blood and pus in the stools. There is low abdominal pain, temperature, a tender mass, moderate leucocytosis and general inaptitude. If the infection is in the sigmoid, it simulates a left-sided appendicitis. The pathology varies in its intensity, may resolve without a diagnosis, but is always prone to recur at increasingly frequent intervals. A low, left-sided tenderness in an adult invariably means a diverticulitis of the sigmoid.

In our gastro-intestinal X-ray studies with patients who have indefinite but aggravating abdominal symptoms it behooves us to keep diverticula in mind. These sacs will fill with barium, but their emptying time is usually greater than that of the regular intestinal tract.

The treatment of diverticulitis of duodenum is usually selective, but surgical removal is most often indicated and necessary. The treatment of acute diverticulitis is the treatment for any acute abdominal disorder. Diverticulitis of the ileum is as much an emergency as is appendicitis. If the neck of the sac be small it may be ligated and the stump inverted. If there is a large neck, a resection is often necessary. Treatment of diverticulitis of the colon should be conservative and palliative in the beginning. Bland diets, mineral oil, hot fomentations and cleansing enemas often allay the acuteness of the disease. A large percentage of these patients present themselves for treatment after there is a well defined abscess. This must be drained and, if symptoms persist, a resection of a portion of the large intestine is necessary by the two-stage operation of Mikulicz.

From 1928 to 1932, inclusive, we have had, at the Chesapeake and Ohio Hospital, one case of acute diverticulitis for every twenty-five cases of acute appendicitis. This ratio, it seems, is a rather startling comparison, and it places diverticulitis in the classification with the more common and ordinary diseases.

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## THE USE OF KIRSCHNER WIRE TRACTION.*

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Kirschner wire traction is traction obtained by the introduction of a fine wire through bone and the production of tension upon this wire to prevent its bending and thereby cutting tissues when traction is put upon it. It is readily understood how difficult it is to drive a fine wire through solid bone and how unsatisfactory it would be if the wire were allowed to bend along the side of the extremity after it had been introduced. It is fortunate that the development of special technique has made it possible to drive such a wire and to prevent its bending.

We are all familiar with the faults of each of the usual methods of traction. It is difficult to get *adhesive* applied properly; there are certain places where it is impossible to use adhesive; for example, in fractures of the distal part of the humerus or tibia; adhesive frequently produces irritation of the skin and if removal is not actually demanded, sometimes, at least, causes serious skin sloughs; and, finally, adhesive often gives way at a crucial point at a time when continued traction means everything. In such events the work of weeks may be lost, and at times excellent results may never be re-obtained. *Heussner's glue*, while having some advantage over adhesive, has many of its defects, and, in addition, has the disadvantage that it is difficult to teach persons to apply it properly. *Steinmann pins* obviate the above faults, but, due to their size, seem to the writer to be more likely to produce some tissue necrosis and to bring about a certain psychological effect on the patient. (The writer, however, uses Steinmann pins at times in straight fracture work.) *Kirschner wire*

*Read before South Piedmont Medical Society, April 18, 1933.

This investigation was aided by a grant from the Wednesday Club, of Danville, Va., in the conduct of its Crippled Children's Clinic.

*traction* has none of the drawbacks above mentioned, is easy in its application, is certain and efficient, can be used almost indefinitely, and does not upset the patient mentally. (As a matter of fact, patients frequently never realize that the fine wire actually goes all the way through the bone).

### Apparatus

The apparatus necessary for the application of this method of traction consists of—

1. A supply of small Kirschner wires.
2. An accordion applicator or introducer.
3. Bows of proper size.
4. Special wrench.

### Technique

The writer feels that the utmost care must be taken with asepsis in these cases. While the method is simple in execution, the patients are prepared in the operating room or in bed as for major bone surgery. After the preparation of the part, a few drops of 2 per cent novocain are injected at the site of the entrance and exit of the wire. No other anesthetic is required, unless nervousness of the patient or painful manipulations or other procedures to be carried out at the same time make it necessary. For the former, the writer is accustomed to sodium amytal; for the latter the procedure would determine the type of anesthetic. The

Fig. 1

5. Tension adjuster.
6. Pair of small pliers.
7. Motor or hand drill with special arrangement to fit accordion applicator. The writer recommends the motor drill, as the rapid revolution of the wire makes its introduction very rapid and practically painless.

The apparatus is illustrated in Figure 1.

introduction of the wire is but a momentary act. The site is selected, the tip of the wire is pressed against this point with the accordion fully extended, pressure is made and the wire driven through the bone. A compound tincture of benzoin dressing is applied. The proper size of bow is selected and one end fastened to the wire. With the other end

loose, the wire is tightened with the tension adjuster. The other end of the bow is now made fast and the tension adjuster removed. Weight is finally applied to the bow in the manner selected by the surgeon.

### Sites of Introduction

The writer has used the following sites of introduction in a representative series of cases:

1. Os calcis.
2. Lower end of tibia and fibula.
3. Condyles of femur.
4. Patella.
5. Phalanges of fingers.
6. Lower end of radius and ulna.
7. Olecranon.

Certain of these, i. e., lower end of radius and ulna and olecranon, can be used in combination with each other to advantage.

### Conditions in Which Kirschner Wire Traction May be Used

Each of the sites above mentioned can be used in several conditions. Only a few representative ones will be mentioned. These are listed below:

### Adjuvants

After the Kirschner wire is introduced and the bow attached, traction is obtained in the physiological direction by the old Buck's extension apparatus, Hoke or Roger Anderson well-leg traction in plaster, or by means of the Balkan frame. The writer uses the Buck apparatus in deformities of the knee and hip from acute disease; he uses the Hoke in fractures of the tibia, fibula, femur, humerus, ulna and radius, and in deformities of knee and hip from chronic disease; he uses the Roger Anderson well-leg traction in fractures of the tibia, fibula and femur, and he uses the Balkan frame in more complicated fractures of the femur and pelvis, in fractures involving ulna, radius and humerus at the same time, and in the early treatment of loss of substance of the radius and ulna.

Figures 2, 3 and 4 are self-explanatory, and show the sites of introduction of the wire and

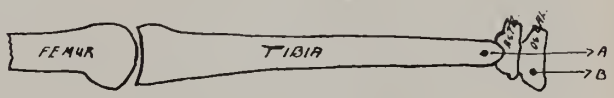


Fig. 2

| Site | Conditions |
|---|---|
| 1. Os calcis | a. Fracture of os calcis.<br>b. Fracture of tibia or tibia and fibula.<br>c. Fracture of femur.<br>d. Fracture of pelvis.<br>e. Deformities of knee from acute or chronic disease, i. e., tuberculosis or burns.<br>f. Deformities of hip from acute or chronic disease, i. e., tuberculosis or burns. |
| 2. Lower end of tibia and fibula. | Same as os calcis, with exception of fracture of os calcis. |
| 3. Condyles of femur. | a. Fracture of femur.<br>b. Fracture of pelvis.<br>c. Deformities of hip from acute or chronic disease. |
| 4. Patella. | a. Extension deformity of knee where knee cannot be flexed because of contraction of anterior thigh group. |
| 5. Phalanges of fingers. | a. Fracture of fingers.<br>b. Deformities of fingers from acute or chronic disease. |
| 6. Lower end of radius and ulna. | a. Fracture of radius and ulna.<br>b. Loss of substance of radius and ulna from trauma or disease. |
| 7. Olecranon. | a. Fracture of humerus. |

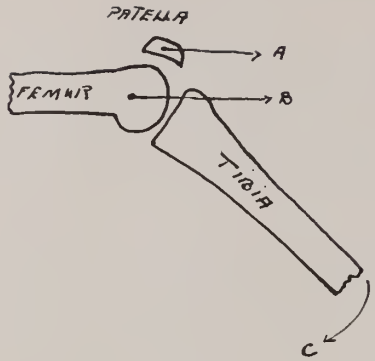


Fig. 3

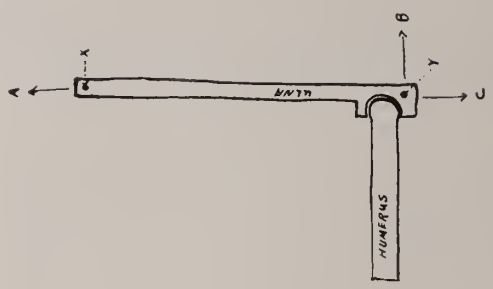


Fig. 4

the direction of the traction in conditions involving the lower and upper extremity. Figure 4 shows how combinations may be used to obtain both traction and countertraction in such conditions as loss of substance of ulna and radius and in multiple fractures.

Figures 5 and 6 show the excellence of the method in fractures of the femur and humerus,

Fig. 5

Fig. 6

respectively. The femur was treated in this case in a Balkan frame, with the hip flexed

Fig. 7.

to 90°. The humerus was treated with Hoke traction in abduction plaster. The patient was ambulatory in twenty-four hours—as soon as the plaster dried.

Figure 7 shows a case of fracture of the humerus treated with Kirschner wire, Hoke traction and abduction plaster. It is obvious how mobile the joint is.

### Conclusion

The writer has a sufficiently large series of cases in which he has used Kirschner wire traction, in the conditions above described, to make him feel that it retains all of the advantages of other methods, has none of this disadvantages, and adds many valuable features not found in others.

## THE DIAGNOSIS OF ACUTE APPENDICITIS.*

W. H. REED, M. D., Kingsport, Tenn.

On first thought, it may seem to you, a waste of energy to discuss a subject so commonplace

*Read before the Sullivan-Johnson County Medical Society, March, 1933.

as acute appendicitis. However, the writer feels that there are few diseases, if any, that transcend appendicitis in importance when considered from the standpoint of the general practitioner. This seemingly bold statement is made for the following reasons: In the first place, it is a very common disease in the everyday practice of us all. This would not make the disease so wrought with importance were it not for the alarming mortality the disease carries with it. With all the information and knowledge that the medical profession has in its possession as to the etiology and treatment of appendicitis, the mortality has not been reduced. In recent years we have heard a great deal said and written about cancer and its alarming mortality. Prevention by early recognition of the initial signs and symptoms seems to be the only promise in lowering the mortality in cancer. However, the country, and especially the medical profession, is much exercised because of the mystery in etiology and the ineffectiveness of treatment. On the other hand, appendicitis is not cloaked in mystery, either in its etiology, symptoms or treatment. Still, like Tennyson's Brook, the mortality goes on and on. Since appendicitis is open and above board in its attacks, and we have an effective remedy for the repulsing of these attacks, why, then, the mortality and morbidity that follow these attacks? Is this mortality the fault of the medical profession, the relatives, of the victims, or both? I leave the question with you.

*Etiology.*—The most important cause of acute appendicitis is bacterial invasion, usually by the colon bacillus. Other bacteria may be the cause during the course of acute infectious conditions and from foci in distant parts of the body. Other causes are kinks in the appendix, foreign bodies, fecal concretions and intestinal parasites. Quite frequently the appendix becomes infected, due to its close proximity to some other infected organ, as in acute salpingitis.

*Diagnosis.*—Acute appendicitis in children is more difficult to diagnose than in adults, due to the fact that many conditions outside the abdomen give abdominal symptoms. The constitutional symptoms are more pronounced in children, and, further, the appendix is often misplaced. The usual signs and symptoms occur in the following order: pain in the abdomen, nausea and vomiting, tenderness and rigidity, fever and increased pulse rate, and leukocytosis.

In making a diagnosis of acute appendicitis, pain is the most important symptom, and should be studied with great care and discrimination. The pain usually starts in the epigastrium. It may start in the umbilical region, and when it does it is colicky in nature. If the pain starts in the right abdomen or in the right lower quadrant, it is not appendicitis. I am speaking of an attack of acute appendicitis. When the pain starts in the epigastric region, it soon spreads to the umbilical region and usually becomes diffuse over the entire abdomen. Nausea and vomiting soon follow the pain, certainly within a few hours. Any attack of acute abdominal pain that is not soon followed by at least nausea is not appendicitis. One symptom that has often been of help to me is the time that nausea and vomiting occurred. If it occurs before the onset of pain, appendicitis can be ruled out.

In 1889, McBurney, a famous New York surgeon, described the now familiar "McBurney point." This is the point of maximum tenderness in acute appendicitis, and is located in the middle third of a line drawn from the anterior superior process of the ilium to the umbilicus. It is preferable to make pressure at McBurney's point with one finger. Of course, this sign is not so reliable in children for reasons already mentioned. This sign has been a great help in making a differential diagnosis, and no sign has ever been found to supplant it in importance.

Rigidity is another sign that is usually present in acute appendicitis, and is found in the right lower quadrant. The absence of rigidity does not rule out appendicitis, and its location will depend on the location of the appendix. In post-cecal appendicitis, and when a colon filled with gas intervenes between the palpating hand and the appendix, there may not be a great deal of rigidity. It has been the writer's experience that fever is a variable symptom, and when the fever is very high, the diagnosis is always in doubt. This is not true in children, as the temperature runs much higher in children than in adults. When the signs and symptoms point strongly to appendicitis in an adult, and the temperature is running above 102, pyelitis, acute salpingitis and basal pneumonia must be eliminated.

Another sign that has been helpful to me

is to have the patient cough and then place his hand at the exact point where he has experienced pain. If there is no pain on coughing, there is a strong doubt as to whether the appendix is the offender.

Leukocytosis is another important sign in acute appendicitis. It is always present if the condition is acute. It is exceedingly important in making a differential diagnosis. A differential count is probably more important than a mere leukocytosis. An increase in the polymorphonuclears is invariably present. Ambrose McGee has recently done some very important work with Schilling's differential count.

Inspection of the abdomen is an important sign. By close observation, it will be noted that the breathing will be more costal than normal, and a bulging or lump will be seen in the right side.

Palpation brings out probably the most important sign or symptom in diagnosing appendicitis. With a warm hand, palpation should begin on the left side of the abdomen, palpating toward the stomach and finishing over the right lower quadrant. The presence or absence of rigidity should be noted, and absence or presence of masses. The facial expression should be carefully watched during palpation, as the fear of an operation will often cause a patient to try to conceal pain during the process of examination. Palpation should be repeated a number of times in order to confirm the point of rigidity, and the location of the pain as to its constancy. Percussion may help some in the location of dull areas. The X-ray, with opaque enemas and meals, is of little value in acute appendicitis. I also feel that rectal examinations are of little value, except in advanced peritonitis, where there may be localized abscesses.

There are a great many signs or tests that may be utilized in making a diagnosis of acute appendicitis. Aaron's sign is a feeling of distress in the epigastric region when firm pressure is made over the area of the appendix. The pain or distress may be more pronounced in the left hypochondrium. Blumberg's sign is a feeling of sharp pain when the hand is removed. This sign is more significant when the infection has passed beyond the appendix and peritonitis is beginning. Brittain's sign is retraction of the right testicle when firm pressure is made over the right lower quadrant, or rather over McBurney's point. This sign is considered by some authorities as being pathognomonic in gangrenous appendicitis. The testicle resumes its normal position when pressure is removed. Meltzer's sign is the production of pain by pressure over the appendix while the patient is lying prone, with arm over head, left leg flexed, and the right leg extended, and attempting to raise the right leg while it is extended. This maneuver impinges the appendix between the psoas muscle and the anterior abdominal wall.

*Differential Diagnosis.* — There are many conditions that may be confused with acute appendicitis. I will not go into a detailed discussion of them, but will only mention some of the more common conditions that are frequently mistaken for appendicitis: Pleurisy and pneumonia in the right lung; renal calculi; pyelitis, and right urethral obstruction; fecal impactions; mesenteric adenitis; mesenteric thrombosis; intestinal obstruction; acute cholecystitis; gastric and duodenal perforations; typhoid fever; acute salpingitis; strangulated ovarian cyst; and rupture of the graafian follicle with hemorrhage. Any surgeon who sees many cases of acute appendicitis will be taxed severely in differentiating between right-sided pneumonia and appendicitis. Pneumonia will give intestinal symptoms, especially in children, that simulate appendicitis very much. You will have pain, vomiting and rigidity, but, on the other hand, the fever in pneumonia is always higher. The leukocyte count will not be of any service, as both conditions give an increased count. The respirations are more rapid in pneumonia. The X-ray, when available, is a great help. However, it would be selecting the course of less evil to open a pneumonia case, than to wait too long and lose the case from a ruptured appendix. Pyelitis can be very easily ruled out from the high temperature and urinary findings. Intussusception and other forms of obstruction cannot always be ruled out, but in these types of cases it makes little difference from the patient's standpoint, as they are also emergencies and require immediate surgical intervention.

To discuss the treatment of acute appendicitis would make this paper too long, and I will confine myself to the treatment of the neglected cases that are seen from a few days to a week after the beginning of the attack.

The treatment of acute appendicitis is fairly well standardized. We are all in accord that operation is the only treatment, and the earlier the operation, the better the chances are for recovery. I am going to recite briefly two cases for your consideration.

*Case* 1.—White female, age 18, was taken acutely ill three days before seen by me, with severe pain in the stomach region, nausea and vomiting. After about eighteen hours, pain, which had gotten over the entire abdomen, had stopped, and the family felt that she was getting better and all would be well. However, on the day previous to my seeing her, she had begun to suffer severely over the entire abdomen, and the vomiting recurred. She had been seen on this day by her family physician.

*Physical Findings:* Face flushed, with a pinched expression. Tongue was heavily coated and the lips parched. The eyes were sunken and there was evidence of dehydration. The past history was negative. The lungs were negative, and the heart action was good. The temperature was 102.5; leukocyte count 14,500; urinalysis negative; abdomen distended and very rigid; there was no palpable masses. A diagnosis of ruptured appendix with general peritonitis was made. Operation was done immediately. There was a foul odor from the abdominal cavity and very muddy fluid was present. The intestines were adherent and covered with a whitish film in places and deeply congested throughout. Free drainage was left in the abdominal cavity. The patient died at the end of the first week.

*Case* 2.—White female, age 13, had had a severe cold, though she continued to go to school, but on November 25th was given two pills. Soon after taking the pills she began having severe pain over the abdomen and became nauseated, but did not vomit. Became very tender and sore over the entire abdomen; purgatives were continued and bowels moved frequently. On November 30th, patient began having almost a continuous desire to stool. Movements consisted of phlegm and some blood. I saw patient on December 3rd. The abdomen was distended and rigid throughout. There was a well-defined mass just inside the left iliac crest. Rectal examination showed lower bowel empty, and the mass could be outlined and filled the pelvis, extending up on the left side around the sigmoid. Barium meal enema showed the colon filled its entire length, beyond the sigmoid. W. B. C. 14,200.

*Diagnosis:* Abscess of mesenteric gland, with possible localized peritonitis following ruptured appendix.

This case was operated on, a median incision being made. There was an enormous abscess in pelvis that extended high upon the left side. A post-operative diagnosis was made of ruptured appendix, and peritonitis with localized abscess. Recovery was rapid without any complications.

These two cases are reported to demonstrate one point, which I think is very important. It brings up the old question, "when to operate." There are a certain number of virulent infections that are very rapid in their progress, with a rapidly spreading septic peritonitis associated with symptoms of prostration, that will terminate fatally with or without operation. On the other hand, I am convinced that a few of these cases that are seen three or four days after the onset of the attack will recover, or at least will localize so that they can be safely operated on, if treated medically with opiates, forced fluids, ice to abdomen, elevation of bed, gastric lavage and the withholding of all fluids except a limited amount of water by mouth. The first case reported would have had a better chance if treated by this method, while the second case shows very clearly to my mind what nature will do even under the most unfavorable conditions.

## CONGENITAL ATRESIA OF THE RIGHT POSTERIOR NARIS.*

R. CLARK GROVE, M. D., New York, N. Y.

Cases of congenital atresia of the nares are still infrequent enough to warrant reporting, especially when they have been cured by simple operative procedures. It is for these reasons that our case is presented. During the past two and one-half years the otolaryngological division of the Allergy Clinic of Roosevelt Hospital, which averages about 600 new cases per year, has seen only one such condition.

Stewart,[1] two years ago, presented two cases (in sisters) of bilateral congenital atresia encountered in his practice at the Deaconess Hospital, Edinburgh, and six cases of unilateral atresia which occurred in the service of the Ear, Nose and Throat Department at the Royal Infirmary of Edinburgh. He notes that over a period of twenty years (1907-1926 inclusive)

*From the Otolaryngological Division of the Department of Allergy, Roosevelt Rospital, New York City.

in 27,863 cases of nasal and sinus diseases there were six cases (0.02 per cent) of unilateral atresia of the choanae and not a single case of bilateral atresia. Stinson[2] has reported recently a case of bilateral congenital posterior choanal atresia and Geiger and Roth[3] one of the left posterior choana.

Congenital atresias may be complete or show a minute perforation sufficient to admit a small probe. They are more often unilateral than bilateral. Pathologically, they are membranous, osseous or membrano-osseous. Apparently heredity and sex play no part in the etiology. According to Stewart,[1] the theories of causation are (1) persistence of the buccopharyngeal membrane, (2) overgrowth medialward of the vertical and horizontal palatal processes. (3) persistence of naso-buccal membrane, (4) results due to an inflammatory condition of the nasal passages in utero, a theory which he discards in his cases.

### Report of Case

A. R., white girl, aged twenty years, telephone operator, was admitted to our Allergy Clinic, then at the New York Hospital, on February 28, 1930, complaining of sneezing and watering of the nose. Her family history, including parents and several brothers and sisters, was entirely negative for any nasal symptoms. Her own past history was unimportant except for a tonsillectomy and adenoidectomy two years before. She had enjoyed good health until five or six years ago, when she began to have attacks of sneezing and watering of the nose, itching of the eyes and lacrimation. The onset was gradual. She had not changed her environment at the time. The attacks would appear suddenly and last several hours. They were nonseasonal and were not related to contact with any airborne substance nor to ingested foods or drugs so far as she had observed. She had no seasonal hay fever nor asthma No headaches nor nasal obstruction were noticed by her and the hearing was not affected. The senses of smell and taste were normal. In 1928 she was examined at one of the large nose and throat clinics because of her trouble and was told to have her tonsils removed, which she did, but with no improvement. Nothing was said about her nasal condition. About a month before admission to our clinic, she went to another nose and throat clinic where she was examined by anterior rhinoscopy and sent to us for allergic tests. No mention was made of any other nasal findings.

*Examination.* — The patient was slightly underweight and slightly anemic. The face was symmetrical. There was a moderate deflection of the septum to the right posteriorly. The nasal membranes were swollen, pale and watery. There was considerable mucus on the floor of the right nostril. The frontal sinuses and antra transilluminated clearly. When an attempt was made to pass an applicator, tipped with cotton and cocaine, to anesthetise for examination posteriorly, a firm obstruction was met on the right side about three-quarters the length of the nostril as measured through the left one. A Wappler nasopharyngoscope was then passed and the obstruction could be felt to be bony. It sloped upward, backward and outward. The inferior turbinate and apparently the tip of the middle turbinate were continuous with it. No perforation could be seen, probed or located with a dye. The anterior tip of the middle turbinate was slightly polypoid, the inferior turbinate hypertrophied and the meatus in the anterior ethmoid region was becoming polypoid. No pus was coming from any of the sinuses. On passing the nasopharyngoscope through the left nostril this side was found to be normal. The adenoids were small. Turning the instrument so that a view of the opposite side could be obtained, no sign of the obstruction could be seen. The Eustachian orifices were normal. However, on posterior rhinoscopy with the mirror, the whole right posterior choana was occluded by a smooth sloping atresia which was about a quarter of a centimeter from the posterior edge of the septum. No posterior turbinal tips could be seen. X-rays showed the right antrum to be slightly hazy, but all the other sinuses were clear. Irrigation of the right antrum was negative for any discharge. The teeth were in good condition. The tonsillar beds still showed some lingual tissue. The ear drums were normal, as was the hearing to the routine tests.

The general physical examination, including the blood Wassermann, was negative.

Intradermal skin tests showed a moderate reaction to stock dust and a marked reaction to her own dust extract. It was observed during the treatment that a 10 per cent argyrol solution in the nose caused vasomotor symptoms. However, we were not able to demon-

strate* any skin-sensitivity by the "patch" method.

The clinical diagnosis was congenital atresia of the right posterior naris and vasomotor rhinitis with a sensitivity to dust and argyrol.

*Operation.*—On July 1, 1931, using butyn-cocaine-epinephrine anesthesia, the obstruction was punctured with a chisel and the edges bitten away with the sphenoid rongeur until an opening about 1.0 cm. x 1.5 cm. was made. The bone was quite hard and covered on both sides by smooth membrane. There was very little bleeding. The septum was not removed posteriorly, but the bony atresia was cut down as closely to the septum as possible. A No. 20 rubber catheter was left *in situ*. The polypoid membrane on the right middle turbinate and the hypertrophied membrane on the right inferior turbinate were removed at the same time. A vaseline gauze packing was placed in the right nostril.

*Course.*—The packing was removed the next day, but the rubber tube was not changed until the fifth day, after which it was changed at three or four day intervals until the end of two weeks, when it was removed. In the meantime the nose was kept cleaned with suction and nasal irrigations, and the patient used albolene drops. After the tube was removed the granulations were touched occasionally with 10 per cent silver nitrate, any adhesions separated, crusts removed with suction, and the operative site dilated gently with large cotton-tipped applicators. The patient made an uneventful recovery and was completely healed in six weeks. Since that time she has been seen at monthly intervals and occasionally the area is dilated with the nasal dressing forceps. She has had only one upper respiratory infection which subsided quickly. The opening after two years is still about the size of a lead pencil and the patient breathes quite freely through this nostril.

### Discussion

This case report involves a young white girl with a congenital unilateral atresia of the right nostril. According to the literature this side is most frequently affected. The patient had never detected the obstruction, and came to the clinic because of vasomotor symptoms. She was seen in two nose and throat hospitals and the atresia was not discovered, the tonsils being removed in one clinic. This is certainly a warning to all of us as otolaryngologists to see that every patient gets a complete and careful examination. The vasomotor symptoms were due to dust sensitivity. What is even more interesting is that the patient showed a definite idiosyncrasy to argyrol, and we believe that this is more frequent than most rhinologists believe. Such patients are made much worse by the Dowling treatment.

The atresia was osseous, being thick and dense throughout, so that we are inclined to think that its origin lay in an overgrowth mediaward of the vertical and horizontal palatal processes as described by Stewart.[1] The operation consisted in simply rongeuring away enough bone to give good breathing space. No submucous resection was necessary. A No. 20 rubber catheter was left *in situ* for about two weeks and the nasal cavity cleaned with suction and nasal irrigation. No post-operative cicatricial atresia developed. Result is excellent after two years.

Stewart's[1] operative procedure consisted in doing a submucous resection, then elevating the membrane from the atresia and rongeuring away the bone. The disadvantage of this method, unless one is skilled, is that the posterior end of the septum may be rongeured away and the atresia left untouched. Stinson[2] simply reamed out the obstruction, using a Freer submucous resection elevator and keeping one finger in the nasopharynx to be used as a guide. Both men report good results in their cases and we agree that congenital atresia of the nostrils is a condition which is quite amenable to operation.

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*Sixty East Fifty-Eighth Street.*

*By courtesy of Dr. James H. Barnard.

# Correspondence

**The Syphilis Problem.**

To the Editor:

In a recent article appearing in the Virginia Medical Monthly (December, 1933, pp. Nos. 524-31), Dr. Taliaferro Clark, Assistant Surgeon General United States Public Health Service in charge of the Department of Venereal Diseases, brings his article on "The

Syphilis Problem" to a close with the following: "In conclusion, may I not quote the statement of one of the leading syphilographers of the country who says that '*The responsibility for the modern control of the infectiousness of syphilis, and therefore its spread, is not in the hands of the church with its preaching, the law with its mandates, or the laboratory with its drugs, but it is to be met or ignored by the every day doctor.*'"

Thus Dr. Clark passes the buck for the suppression and prevention of syphilis squarely up to the individual members of the medical profession. According to his statement, no other agency is concerned with the issue. That much is perfectly clear. Since the disease seems to be on the increase in our country, this is certainly a stinging, disconcerting, humiliating bit of news to us every day doctors.

The medical profession is then, according to Dr. Clark, in a position in which, in order to maintain its high standing, it must do one of two things, or a combination of both: it must either change most radically its method of dealing with this disease, or it must satisfactorily refute the allegation.

Should the *entire* responsibility of this issue, or the *only* blame for the American failure to control and reduce the amount of syphilis among us, be placed *solely* upon the shoulders of the every day doctor? I do not think so, and I take this method of dissenting from Dr. Clark's belief. I feel that the charge is unfair, and that a cold, analytical review of the facts in the case will not substantiate it. In truth, I feel as deeply as I have ever felt anything in connection with my professional work that the eventual good of our common country will be hurt no little if this statement is allowed to go unchallenged, or this belief permitted to prevail. I say this because, as it now conducts itself, no inroads are being made upon the average prevalence of syphilis by the nation; the reverse is true: the average increases, and, unless we alter the order of progression, an appreciable degree of national degeneration will be the inevitable consequence.

In a treatment survey several years ago of the cases of syphilis in the indigent which was made from the records of the hospital that treated all of this type of patients for the city of Norfolk, it was found that the average amount of treatment submitted to by the whole was 1.3 doses of neo-salvarsan and 1.2 doses of mercury or bismuth per patient: some individuals took more; others none. What actually happened was that these thousands of patients took only that woefully inadequate amount of treatment that it pleased them to take. The medical attendants were powerless to influence them.

In speaking of this willy-nilly state of affairs, the City Health Commissioner stated: "The question of what this department, with its limited means, can do in dealing with syphilis has been my real stumbling block since I have attempted to serve the City in a public capacity. I have discussed the subject with the hospital authorities, with the City Attorney, and with the police officials, and I must confess that I have made no progress."

Wherein rests the culpability of the every day doctor in such instances as this? In the interest of the health of his community the every day doctor has assisted effectively in creating the office of Health Commissioner to represent him and his city or county, and to carry on for both far more successfully than he, individually or collectively, can carry on. And yet, this Health Commissioner, after consulting with the duly vested authorities, and after seeking cooperation from all possible sources, as well as using to the fullest the resources of his own department, admits openly that the situation is utterly beyond him.

How can the every day doctor be responsible for the prevalence of syphilis when he cannot treat those who have it unless they seek him out for this purpose, and, having sought him, willingly take the amount of medication needed to render them non-infectious or to cure them? The decision is not his to make. He has nothing to do with it. It is the patient's right to decide what shall be done in the matter, and all too often syphilitics even of and above the average in intelligence will not carry out fully his instructions as to treatment. There is no form of persuasion or therapeutic hypnotism within his power that the every day doctor may use routinely to change the reaction of the mass of syphilitics in this respect. He succeeds in inducing many syphilitics to follow his advice to the letter, but he *cannot reach or touch* that irreconcilable, irresponsible remainder which is the greatest disseminator of the disease.

It is more than likely that there are every day doctors who do not diagnose their cases as early as might be, or who do not administer either enough or proper treatment. Let

us grant that there are more of these delinquent physicians upon the professional roster than we would like to see. But these negligent ones are not responsible for the whole of our great army of syphilitics. For the most part, we must thank the luetic moron for this vast array of infected ones; there lie the horror and the tragedy of the thing, for these are they whom neither the health official nor the every day doctor may reach under our present system of management of the disease. These are they who decide the issue.

Dr. Clark has set himself on record as confirming this statement when he said in a bulletin from his department a few years ago: "It matters not how conscientious or skilled a physician may be or how well organized the public clinics are, there still will be found great numbers of individuals who neglect to take the minimum treatment necessary to prevent relapse, and a far greater number who do not obtain treatment in amount sufficient to prevent the recurrence of the late manifestations of the disease."

If I were called upon to place the blame for the prevalence of syphilis in the United States, I would not lay it at the door of either the every day doctor, the local, the State or the United States Public Health Service. I would say that *nationally* we lack a system of management of all the venereal diseases, which offers the either immediate or the ultimate hope of subduing or lessening them. That identical want of adequate, sensible regulation and wise prevision is permitting the killing, mutilating malady called granuloma inguinale to spread among us in the same unchecked, moronic manner that syphilis has already done and still contiues to do. We must do here in America what has already been done in certain European countries; we must put syphilis at the mercy of the health authorities and the every day doctor, instead of leaving our people, as we now do, at the mercy of syphilis.

Due to government interest in the disease, and regulation of it, the amount of syphilis has been reduced in the last few years as follows in these countries: England, 30 per cent; Germany, 31 per cent; Denmark, 50 per cent, and Sweden, 85 per cent. Syphilis is treated by every day doctors in those countries also. Since we do not concede the every day doctors of Europe to be more intelligent than their American confreres, it must be that the scheme under which they work over there is much superior to the one that is followed here. What else can it be?

Therefore, it is not necessary for the United States to break virgin ground in which to plant the seed of the suppression of syphilis. All that is needed here is to adopt, or to perfect, the best features of the control measures that have been put into being in countries like England and Sweden.

The New Deal has rudely clouted our once impossible banking system into a more responsible state; it is preparing to deal a sickening blow to the reign of terror which is so fecund of gangsters, racketeers, and other criminals; so, at the same time, why not resurrect the corpse of the emergency health intervention act? It is dead as far as syphilis is concerned, it seems. As you know, this measure permits the United States Public Health Service to concern itself with local and state health affairs in emergency.

Then, let us bedeck this revivified measure in raiment of semi-European hue and cut; spirtualize it with reciprocal *bon comraderie* between the every day doctor and the various public health agencies; fill its war chest, and send it forth to do nation wide battle against syphilis.

As the every day doctor, who is writing this, sees the issue, he cannot, in justice to himself and in fairness to his people, accept the buck from Dr. Clark. With warmest admiration for Dr. Clark personally (of which sentiment Dr Clark is fully aware), and with the highest opinion of his sincerity and humanitarianism, the undersigned makes bold to pass the buck back to the United States Public Health Service through Dr. Clark with the mature suggestion that that organization lay this grave and pressing issue of syphilis before the President of the United States; impress him with the fact that it is our greatest public health problem, and request him to create a National Venereal Council for the purpose of devising ways and means successfully to combat the venereal plague which slowly, silently, stealthily, but none-the-less surely ravages us.

Patriots and humanitarians all, let us quit passing the buck: let us do as Sweden has done; let us *also* ally ourselves together against syphilis, and crush out 85 per cent of *our* infections in the next ten years. I suggest this not only for the incalculable benefit of living Americans, but also in behalf of the generations yet unborn.

*Norfolk, Va.* Thomas V. Williamson.

# Proceedings of the Medical Society of Virginia

EXPLANATORY NOTE.—The Council of the Medical Society of Virginia, at its meeting on January 16, 1934, unanimously adopted the following and ordered it to be published in full in the February issue of the MONTHLY.

## A REPLY to MESSRS. SHIRLEY CARTER AND W. I. WHEARY

**With a Brief in Support of Certain Legislation to be Proposed by the Medical Society of Virginia Relative to the Management of State Hospitals for the Insane.**

This communication is in reply to a pamphlet printed over the signature of Mr. Shirley Carter and Mr. W. I. Wheary,[1*] entitled,

"THE PRIVATELY OWNED MENTAL SANATORIUMS
Versus
THE STATE OWNED MENTAL SANATORIUM."

We are advised that this pamphlet has been given wide circulation, especially among members of the General Assembly. It can have only one ultimate object, namely, to influence pending legislation. What is that legislation, and what will be its effect?

The whole purpose of the pamphlet seems to be to throw down a barrage, thereby to divert attention from the main objective, which is to put over a bill to legalize what is now being done illegally.[2] Their point of attack is upon two physicians of the Commonwealth of Virginia, singled out for attack presumably because they are interested in private sanatoria for the treatment of nervous and mental diseases, and are, therefore, selfishly interested in destroying the DeJarnette Sanatorium. Let it now be put into the record specifically that this present publication is in no sense an apology for, nor a defense of, any physicians or private sanatoria, and any attempt to construe it as such is plain camouflage.[3]

Obviously, the pamphlet to which this is an answer is not official: it is not issued with the authority of either the General Hospital Board or the Special Board of the Western State Hospital. If not official, then the publication is purely personal, reflects merely the personal views of the signatories, and is prompted by personal bias. Superficially, then, it would seem to deserve no more consideration than the strictly personal opinion of any other two citizens of the Commonwealth.

But, in reality, the attack is made by these two members of the State Hospital Board upon the organized medical profession of Virginia, for *the Medical Society of Virginia passed the resolutions of which these gentlemen complain and published them in its official journal.* These resolutions are set forth in full in the appendix.[4]

This present publication is, therefore, official, in contradistinction to the pamphlet of these two gentlemen. It represents the opinion of the Medical Society of Virginia, and this Society, in turn, speaks for the organized regular medical profession of the Commonwealth of Virginia.

Furthermore, since this pamphlet makes certain erroneous statements with the finality of fact, and since it creates a smoke-screen through which it is impossible to discern the facts, it becomes necessary for the Executive Council, the official *ad interim* body of the Medical Society of Virginia, to reply.

So much to make plain the truth that whatever in the resolutions of which *these gentlemen complain is ridiculous or false, malicious or libelous*, is not the personal views of any two or three selfishly-minded or misled individuals, but is the official action of organized medicine in Virginia, and this reply has like weight.

It is remarkable that these resolutions pass the critical scrutiny of these two gentlemen with only one allegation of false statement. The sentence to which exception is taken is: "that the surplus thus derived from the operation of the DeJarnette Sanatorium is being retained by the officers of the Western State Hospital, and not turned back to the State treasury." It is more remarkable still that we

*Such figures in the text refer to comments appended to this paper.

can prove that in this instance we are simply paraphrasing the *signed statement of Dr. DeJarnette himself.* We cite his answer to Question 42, one of several questions addressed to him by Dr. J. K. Hall, a member of the General Hospital Board, and answered by Dr. DeJarnette under date of August 22, 1933: The question and answer follow:

"Question 42: Why is a charge made for the treatment?

A: To pay the expenses of people who were not willing to accept care and treatment at the State hospital, and *to make a profit to be used for extra comfort for the patients at the Western State Hospital* (italics ours), and enable us to furnish treatment at a moderate charge, which is from $500 to $1,000 per year less than the average sanatorium."

The pamphlet indicates that it quotes verbatim a communication from Mr. J. H. Bradford, Director of the Budget of the Commonwealth of Virginia. If Messrs. Carter and Wheary are willing to rest *their charge of falsehood and libel* upon such a flimsy foundation as Mr. Bradford's letter, we are content. In fact, Mr. Bradford's letter says nothing, except that "the law requires all revenues collected by State agencies to be paid into the State treasury, and this procedure must, of course, be followed in the case of . . . the DeJarnette Sanatorium" and such is his understanding of the way these funds have been handled.

It may be the fact that the net earnings of the DeJarnette Sanatorium have been deposited with the State treasury, and segregated on the books of the treasurer to the account of the Western State Hospital, to be spent as occasion arises at the Western State Hospital. If there is any material difference between this manner of handling these earnings of the Sanatorium, and the manner in which the resolutions affirm, then we apologize. Maybe we relied too much upon Dr. DeJarnette's statement. Notice, please, no one has accused Dr. DeJarnette of withholding this money for his personal use, though these gentlemen very indignantly say so.[5-6]

There is a booklet under the title, "The DeJarnette Sanatorium". This is a very handsome advertising medium. It contains absolutely nothing to identify the Sanatorium as a unit of the Western State Hospital, nor does it in anyway designate it as a state institution.[7] In this booklet an examination charge of $20 is prescribed. Nothing is said of the disposition of this charge. The rates are put at $28 to $35 per week.[8] This basic rate is not one cent less than the average basic rate at the privately-owned hospitals of Virginia, and is about $1 per day less than the basic rate prevailing at the three privately-owned nervous and mental sanatoria operating within the State.[9]

The existence of this booklet and its contents go to show how far the present DeJarnette Sanatorium has drifted away from its original conception and purpose. We are told in this pamphlet of Messrs. Carter and Wheary of the original conception and plan of Dr. DeJarnette. We state emphatically that the plan as originally proposed and approved by the several agencies mentioned, namely, the General Hospital Board, the Legislature and the Governor, and the institution as at present administered and used, are as far apart as the poles. *Originally*, it was understood that this institution was to be a colony of the Western State Hospital, *a part of it*, where a selected group of patients of the parent institution could be segregated for special study and treatment. *Instead*, it is operated as if it had no connection with the Western State Hospital, just as if it were a private sanatorium, admitting patients who are not listed as patients of the Western State Hospital, *nor necessarily citizens of the Commonwealth of Virginia.*

The taunt is thrown at us, why, if the doctors of Virginia are so much incensed at the commercialization of the practice of medicine by the State Hospitals for the insane, they are not equally incensed at the activities of the Board of Health, the Tuberculous Sanatoria of the State, the hospitals of the medical schools, etc. We set forth the answer to this question in the appendix,[10] where those who are interested may read, but suffice it here to say that the Medical Society of Virginia appointed, under the same resolutions complained of, a special committee to investigate all governmental interference with private practice. This committee has been very diligent and searching in its inquiry. It now reports to the Executive Council that its study has not yet been concluded, but so far its inquiry does not reveal pernicious practice on the part of

any State agency, *other than that of the Western and the Southwestern State Hospitals.*

Since the matter of the State Laboratory has been specifically mentioned, however, we might say that the State Laboratory does not charge *anything for its services*, and is not permitted to do so.

Furthermore, the State Tuberculous Sanatoria, also brought into the picture, charge only $1 per day when any charge at all is made.

The hospitals of the medical schools likewise make only a nominal charge for their clinical patients.

It should be recalled at this point that the resolutions of the Medical Society of Virginia to which Messrs. Carter and Wheary except, were also directed against the irregular practice at the Southwestern State Hospital at Marion. These gentlemen do not undertake to defend the practice of the staff of the Hospital at Marion, except in a general way. But, since the practices at Marion are under equal condemnation with those at Staunton, and since the nature of the offenses at the two institutions is not the same, the resolutions dealt with the two situations differently.

The staff of the Southwestern State Hospital was found guilty by the General Hospital Board of *practicing medicine and surgery upon persons who had no symptoms of mental disorders*, who in most instances were not indigent, who usually were not cases of emergency necessity. The recommendation of the Board, upon stating this finding of fact, is to the effect that all such practice within and without that institution be discontinued, except proper consultations and acute emergencies.

The full significance of this finding of the Board and the effect, or lack of effect, of its "recommendations" upon this irregular practice must be appreciated in order to understand remarks we shall make in a few moments.

In spite of this unanimous finding and conclusion, the practice of medicine and surgery upon non-insane patients, who are not indigent and not "acute" emergencies, continues.

It is pertinent to ask why the General Hospital Board had to content itself with simply making a "recommendation" to the Special Board in this case. Why did not the Board pass its own orders?

The answer lies in the fact, not generally appreciated, that the General Hospital Board seems to have no direct control over any of the State Hospitals! In fact, there is no agency of the State so loosely controlled or administered as these State Hospitals for the Insane. The Commissioner of Public Welfare is *ex officio* a member of the General Hospital Board, but he is not its statutory chairman. There is no chairman fixed by law. He has no authority nor control whatsoever over these hospitals. He does not cast a vote except in case of a tie.[11]

The Special Board of each hospital is its governing body. But, since the superintendent is practically, if not actually, the creature of the Special Board, he can "get by" with most anything, so long as he is in accord with the controlling element of his individual board. Hence, in a very real sense, the superintendent may do very much as he pleases with this immense investment of the people's money, and with the fortunes of the one or two thousand helpless inmates of that State Hospital.

*It is for these unfortunate mentally diseased people, perhaps some nine or ten thousand of them, that we are pleading*, when we ask that some curb be put upon the extravagant plans and purposes of the gentlemen in control of these two institutions.

Can it be supposed for a moment that the organized medical profession of Virginia would stultify itself by pleading the cause of three physicians and of the ownership of three private sanatoria, or even of the entire profession, as opposed to the interests of two and one-half million people of Virginia? When, before, has the profession of medicine as a body been accused of seeking its own interests at the expense of the people whom it serves? Yet this is exactly the accusation that these two gentlemen bring. On the contrary, we proudly affirm that even during these desperate times, the physicians of Virginia have stood steadfast to the trust committed to them, to their mission of relieving sickness and distress as best they can, without regard to ability to pay, even when they themselves were weighted down with debt and inability to meet even the expense of practice. And, so far, the medical profession has not asked relief through the expenditure of State funds.

The interest of the physician is the interest of the public which he serves, and it is vicious to try to set the physician and the public in opposing camps. The rights of the physician are simply and solely his rights as a citizen of

the State. *As such, he has the same rights of protection of his property and his business as any other citizen of the State has.*[12] Is the physician restrained from seeking to protect his business or his investment merely because he is a physician, or owner of a non-subsidized hospital or sanatorium?

But it happens that the rights of physicians in this present instance are not in conflict with the interests of the mentally diseased, even though these gentlemen try to make it appear so.

Today, the Western, the Eastern and the Central State Hospitals are literally crowded to their doors—or floors, for ninety patients at the Eastern State Hospital are actually sleeping on the floors because there is no room there to set up beds for them—while Dr. DeJarnette operates a splendid quasi-private sanatorium with thirty patients and a bed capacity of fifty-two.

Today, eight graduate nurses minister to thirty patients in that sanatorium, some of them neither citizens nor taxpayers of the State of Virginia, while in other State Hospitals other patients, some of them members of distinguished and honorable Virginia families, wallow in their own filth or feed themselves with their fingers, because there are not attendants enough to supply them with the ordinary decencies of human life.

Today, Dr. Wright, Superintendent of the Southwestern State Hospital, deplores through the medium of the public press the fact that several of his buildings, as well as those of other State Hospitals for the insane, are firetraps, and yet while he was talking they were treating the non-insane, non-indigent, non-emergency patients in a most elaborately, even extravagantly, built and equipped fire-proof medical and surgical unit of 125 beds. By its very construction, arrangement and equipment, this unit called the Harmon Medical Center was never planned for the care of anything but the private and semi-private patient. Had the State appropriation spent thus been spent upon fire-proofing the buildings housing the genuinely and helplessly insane under his care, Dr. Wright would have no cause to deplore his unwise expenditure of the taxpayers' money, nor dread the horrible catastrophe of fire trapping these helpless individuals.

Besides, both Dr. DeJarnette in the one case and Dr. Wright in the other would have really served the interest of their unfortunate, helpless, pitiful patients, had they thought less of their personal or institutional ambitions, and more of the real needs, not only of their own patients, but *of the inmates of the State Hospitals at large.*

In other words, *the present situation indicates the evils of a lack of centralized control and administration of all State Hospitals as a unit.* At present, each Special Board is in active competition with every other special board to acquire for its own institution appropriations and privileges equal to or surpassing that of the others. Furthermore, when these several special boards meet as the General Hospital Board, each having its own ax to grind must indulge in the popular game of "log rolling." It is natural under such circumstances that the interests of the whole patient population, and of the prospective increase of this population, is not always uppermost in the board's mind.

*To find the remedy for such a condition is the thought uppermost in the minds of the Medical Society of Virginia when it passed the resolutions* now under fire of Messrs. Carter and Wheary. As one such remedy we propose for serious consideration the proposition that all State Hospitals for the Insane and the Colony for Epileptics and the Feeble-minded should be put in charge of a *Commissioner of State Hospitals*, appointed by the Governor and responsible to him. This commissioner should be given clear authority, and charged with the duty to act as the executive head of the General Hospital Board. He should not serve on the Special Board of any of them, but should frequently inspect the several institutions. He should make recommendations with the entire situation in mind, to improve conditions in all so far as possible, rather than special favors and privileges for the sake of the few.

The Commissioner of Public Welfare is probably not the proper person to be further burdened with these enlarged duties and responsibilities. He is not a physician and his training and activities presumably lie in other channels. Nor would the Medical Society of Virginia advocate the creation of another officer of State government. Fortunately, this is not necessary. We suggest that it may be perfectly logical, appropriate and practicable to appoint the *Commissioner of Health to be also the Commissioner of State Hospitals.*

It should be stated explicitly that this suggestion was formulated without the knowledge of the present Commissioner of Health. But what appointment could be more natural! The insane person is a diseased person, even though his disease be mental rather than physical. Why not put a physician in charge of the mentally diseased as he is today in charge of the tuberculous?

Finally, it should be distinctly understood, if it has not already been made clear, that the physicians of Virginia are not seeking in any manner to hamper the development either of the physical properties of the State Hospitals, or means of rendering their inmates more comfortable, or of expediting their return to health. On the contrary, these are the exact desiderata for which we are contending. We ask only that these boons be not limited to the fortunate few at the DeJarnette Sanatorium and the Harmon Medical Center, but wisely expended for the good of the entire patient personnel of all State Hospitals.[13]

With this single end in mind, we are recommending and urging *two additional clear-cut propositions*, to-wit:

First: *No patient shall be admitted to a State Hospital for the Insane, nor to the State Colony for Epileptics and the Feeble-minded, nor to any unit, extension or addition of the said hospitals or colony, except as the patient is legally admitted because of mental disease, epilepsy, feeble-mindedness, drug-addiction or inebriety.*

Second: *No patient admitted to any of the afore-mentioned institutions shall be charged any fee or hospital charges, or any charge of any sort whatsoever, except such charges as may be made to the United States Government under contract for the care of veterans.*

End the commercial motive, the lure of profit, for admitting patients to State institutions, and the practice will cease. Then, buildings, equipment, appropriations, the time and thought of the staff and nursing personnel, now diverted to irregular and unauthorized activities, can be directed to the legitimate purpose for which State Hospitals were intended. In this way, and in this way only, will the intolerable conditions now prevailing in these State Hospitals for the insane be corrected.

Submitted under authority of the Constitution and By-Laws of the Medical Society of Virginia, by its Executive Council.

R. D. Bates, M. D., *President*,
Agnes V. Edwards, *Secretary*.

Appendix

(1) Messrs. Carter and Wheary are two of the three members of the Special Board of the Western State Hospital at Staunton. Dr. J. C. King is the third member.

(2) The Executive Council of the Medical Society of Virginia is reliably informed that a bill, a copy of which the Council has seen, has already been introduced in the General Assembly. This bill permits the officers and Special Board of the Western State Hospital and/or the DeJarnette Sanatorium to admit patients, whether they be citizens of Virginia or not; to charge them primarily sufficiently to maintain the Sanatorium, *or more*, at their discretion; to segregate on the books of the State Treasury these earnings to the account of the DeJarnette Sanatorium, to be used for further extension of the plant.

The very fact that such powers and privileges are now being requested of the Assembly indicates that similar practices in the past were admittedly illegal.

(3) It happens that the two physicians under attack, Drs. Jas. K. Hall, of Richmond, and J. C. King, of Radford, are also members of the General Hospital Board, of which Messrs. Carter and Wheary are members. Dr. King is actually the third member of the Special Board of the Western State Hospital, to which Messrs. Carter and Wheary belong. And yet Dr. King was not consulted in the preparation of this pamphlet.

(4) *Resolutions Concerning Irregular Practices at Certain State Hospitals*

*Whereas*, The General Hospital Board has recently found that the medical officers of the Southwestern State Hospital have been practicing medicine and surgery at that institution on persons who have not been legally admitted to this Hospital; and that the Western State Hospital has built and is operating a detached unit for the care and treatment of a class of psychotics and neurotics, not all of them citizens of the State of Virginia, and none of them listed as patients of the Western State Hospital, to be charged in excess of the cost of maintenance at that institution, and yet less than the bare cost of maintenance in any private institution; and that the surplus thus derived is being retained by the officers of the Western State Hospital, and not turned back to the State treasury.

*Whereas*, The medical officers of the five State institutions for insane are paid salaries and other perquisites of office adequate to maintain them and their families; and these salaries are derived from general taxation, and physicians are taxed for this purpose by assessment equal to that of all other citizens.

*Whereas*, Practice of this sort is a long step toward a situation even more obnoxious than "State Medicine," for in these present instances only a small fraction of the total physicians and institutions of the State are subsidized at the expense of the many non-subsidized.

*Whereas*, Profit-making by the State at the expense of any class of its sick people is wrong, ethically speaking, because it is tainted with com-

mercialism; and unfair, because such practice puts the State into direct and destructive competition with a profession and business universally admitted to be a necessity in civilized society; and, furthermore,

*Whereas*, Any use of the property and the facilities of the State for private gain, including the private practice of medicine, is, in our opinion, illegal, if not actually unconstitutional; and failure to pay into the State treasury any surplus which the institution may have at the close of any fiscal year is also illegal, in our opinion; and yet

*Whereas*, There are intimations that efforts will be made to legalize such illegal practices by legislative enactment: Now, Therefore,

Be it Resolved by the House of Delegates of the Medical Society of Virginia, in regular session at Lynchburg, Va., on October 25, 1933,

*First.* That we, speaking for and in behalf of the organized regular medical profession of the State of Virginia, hereby express our commendation of the action of the General Hospital Board in the two specific instances mentioned above, insofar as this action went into the matters complained of; and that we request this Board to be diligent to see that its recommendations are faithfully complied with. For we realize that the wording of the resolutions of the General Hospital Board in each of these two instances leaves room for wide evasions.

*Second.* That we hereby record our definite and vigorous opposition to any and all practice of medicine at and from a State institution, except that practice for which each of the said hospitals was intended.

It is the plain intention of the State, when employing the medical staff of a State hospital, to employ a personnel adequate to render efficient service to the inmates of the said hospital, *and for no other purpose.*

Efficient service to one or two thousand insane individuals, for instance, is presumed to require the full working time of each member of the staff.

If, therefore, the members of the medical staff of any State hospital have time to devote to other practice, one of two conclusions is inescapable: namely, either this staff is overmanned, or the duties for which the members are employed are being proportionately neglected.

Either conclusion is intolerable.

Therefore, it follows that the State-employed physician should divorce himself absolutely from all other practice, and should devote himself exclusively to the duty for which he is employed.*

*If the above reasoning be sound, it is immaterial and beside the point whether or not fees be charged. For, in either event, the tax-supported State-employed physician deprives other physicians of their rightful opportunity to earn and receive legitimate fees which would have been theirs had not these State-employees taken over the service.

If, however, fees be charged and retained by the State-paid physician, he compounds the offense by privately practicing on or in State property, and by using public facilities for private gain.

If, on the other hand, he extends his services gratuitously to those who are able to pay, he further offends by pauperizing that part of the public, with all of the evils growing out of such a process.

The same reasoning applies in the case of admittance to a State institution on the grounds of "policy," personal friendship, or non-dependent kinship to an employee.

Likewise, if the time of the staff is fully occupied with its regular duties, it has no time to devote to the "pauper patient," whether a genuine pauper, a semi-pauper or a pseudo-pauper.

Nor is the allegation of general "emergency" an adequate excuse for such practice. With the present-day spread of physicians, surgeons and hospitals, and with the development of highways and means of transportation, the occasion is so rare that it is almost non-existent which will justify the admittance of a medical, surgical or obstetrical emergency to the care of a staff of psychiatrists, for example. The more devoted the staff to its special work, the less time the personnel has to care for the general emergency, and the less its desire for such work.

*Third.* That we also oppose and protest the use of any building or unit of a State hospital in any way to derive a profit from operation: whether the patient be committed by process of law, or enter the institution voluntarily; whether the patient be a citizen of this State, or not; whether the said profit be derived from physician's fees, or from hospital charges; whether the illness causing admittance be in line of said hospital's work, or outside of the special character of such work; and whether the said profit is to accrue to the medical staff, or is to be entirely expended upon capital improvements of the said hospital, or is to be turned into the State treasury.

*Fourth.* That a copy of these resolutions, certified by the President and Secretary of this Society, be placed in the hands of the Governor of the State of Virginia and of the Commissioner of Public Welfare (who is *ex officio* chairman of the General Hospital Board), as reflecting the considered opinion of the medical profession of the State.

*Fifth.* That we hereby instruct the Legislative Committee of this Society to be alert to detect any effort which may be made to legalize by legislative enactment such practices as we are condemning herein, whether such effort be made openly, or by "rider" to an otherwise inoffensive legislative bill; and if such bill be introduced, to oppose its passage with all the weight and influence of the organized medical profession of the State.

*Sixth.* That we regard the two above mentioned situations significant, furthermore, because they are two specific instances of the encroachment of all units of government—Federal, State, county and municipal—insidiously, but steadily and unrelentingly, upon the private practice of medicine. In other words, they are but milestones in the progress toward "State Medicine."

That a committee of five be appointed from various parts of the State, none of whom shall in any way be connected with the State, municipal or county health department, or necessarily a member of the House of Delegates, to investigate any condition where physicians employed by the State, city, or county as health officers or otherwise, seem to be practicing medicine or using equipment owned by the State in competition with licensed practicing physicians and surgeons; that they shall file their report, together with any recommendations, with the Council of the Medical Society of Virginia in time for their mid-winter meeting, which is usually in January.

*Seventh.* That, if funds in excess of those already allocated to the Legislative Committee be necessary to carry out the purpose of these resolutions; and if funds be required by the Special Committee herein provided for; and if in each instance the President of this Society approves: either Committee, or both, is hereby authorized to draw upon the general funds of this Society, not otherwise appropriated, for a sum not to exceed $--------, or as much thereof as may be needed to discharge the purpose of these resolutions.

(5) In either event, the account of the DeJarnette Sanatorium seems to have been irregularly handled. First, because the law says all net earnings of State agencies shall revert to the *general fund* of the State treasury, and be re-disbursed by act of the General Assembly. Second: Any money earned at the DeJarnette Sanatorium is unlawfully earned. Dr. DeJarnette signed the statement that *patients of the DeJarnette Sanatorium are not patients of the Western State Hospital.* Therefore, they are not patients of the State of Virginia. Then, they were not law-

fully admitted to any building or unit built, equipped and maintained out of State funds. From which it follows that Dr. DeJarnette had no legal right to collect any charges whatever from the patients of the DeJarnette Sanatorium.

(6) That these earnings are considerable is indicated by the fact that the net earnings of the DeJarnette Sanatorium in one year alone were at least $15,000.

(7) . . . unless, indeed, one happens to know that the three gentlemen who constitute the special board of the Western State Hospital are identical with those named as the "Board of Directors" of the DeJarnette Sanatorium.

(8) Why should the State of Virginia be interested in caring from its public funds for citizens who can pay $28 to $35 weekly and indefinitely for hospital treatment?

(9) In the pamphlet under review the DeJarnette Sanatorium is referred to as the sanatorium of the citizens of Virginia. True as this is in one sense, when we consider the facts that all State institutions operate without capital charges, without taxes, insurance and upkeep expenses; with salaries of personnel from the highest to the lowest paid by the taxpayer; with the privilege of making all purchases of supplies through the State Purchasing Agency, far below the usual market prices; the rates advertised at the DeJarnette Sanatorium become appalling rather than a boon to the distressed citizenry of Virginia, as Dr. DeJarnette contends.

(10) There is no general complaint against the present fundamental activities of the State Board of Health. Offenses have occurred, through mistakes and misunderstandings. But at this time there is splendid cooperation between the Board of Health and physicians in practice. Most important, physicians of Virginia are assured of a sympathetic and attentive hearing upon any point of disagreement that may arise in the future.

Let it be admitted that the State Tuberculous Sanatoria should be on exactly the same basis with regard to charging their patients as are the hospitals for the insane. There is no solid reason in fact why the one class of patients should be charged by the Commonwealth, and the other not. Ultimately, that is when it becomes possible and practicable, the tuberculous in the State Sanatoria should also be full wards of the State.

However, it should be remembered that the patient of the tuberculous sanatorium receives the same care and treatment whether he pays $1.00 a day or nothing. Contrast, on the other hand, the patient in the DeJarnette Sanatorium or the Harmon Medical Center with the deplorable condition of the average patient in the several State Hospitals for the Insane.

To refuse to admit that the hospitals of the medical schools are in a class apart from State Hospitals for the Insane is insincere. Medical schools must have clinical material for purposes of instruction. In the absence of huge endowment, this clinical material must be provided for by the State.

Of course, this privilege of the hospitals of the medical schools should never be abused, but experience has demonstrated that teachers of the applied branches of medical science such as medicine, surgery, obstetrics, etc., must have some private practice, to keep themselves capable teachers of the science and art of medicine. Furthermore, if they are not allowed this means of augmenting their meagre salaries, it will be impossible to secure and retain reputable and respected teachers.

(11) The General Hospital Board is composed of fifteen men and women who are the Special Boards of the four State Hospitals for the Insane and the Colony for Epileptics and Feeble-minded. They meet as a general board at the several institutions in succession, hear what reports, etc., may be submitted to them, spend a pleasant social hour or so at lunch provided for them by the institution, take a stroll, perhaps, through the grounds and buildings, and then depart for their several homes.

(12) Let us propose a hypothetical situation: Suppose you owned a department store in Staunton or Marion. Suppose that the great State of Virginia should establish well-stocked State stores in these two towns, and properly accredited wards of the State were permitted to draw without cost upon these stocks. Now, suppose the managers of these State stores should determine that they were overstocked with goods, goods for which they had not paid a penny, and should actually sell these State-purchased goods in your market at a price below your power to purchase:

Would it not be absolutely indifferent to you what these managers did with the proceeds of such sales? Would not such action threaten to bankrupt your limited business resources? Would you not feel, therefore, that you had some rights in the premises, and would you not protest and fight against such unfair competition with all the vigor and all the remedies at your command?

If your answers be affirmative, we submit without fear of contradiction that a strictly analogous situation is presented by the unfair practices of these two State institutions in competition with private physicians and hospitals.

(13) We cannot understand the statement of the pamphlet to the effect that the resolutions of the Medical Society indicate that it (the Society) will maintain a "paid lobby" at this session of the General Assembly. Surely, if one be looking for malicious utterances, this is one. No one can read into these resolutions anything more than that the payment of actual and legitimate expenses only is contemplated. The fact is that the Medical Society of Virginia is not maintaining a paid lobby for any purpose, that any physician who appears before this Assembly in this matter does so with the knowledge that his recompense can be only that satisfaction which comes from having discharged a public duty.

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka Street, Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Avenue, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 South Market Street, Petersburg.
*Corresponding Secretary*—Mrs. Charles A. Saunders, 1000 Gates Avenue, Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Avenue, Richmond.

## Organization Meeting of the Mid-Tidewater Auxiliary.

On Tuesday, January 16th, a meeting was held in Richmond at the Academy of Medi-

cine Library for the purpose of organizing an auxiliary among the doctors' wives of the Mid-Tidewater Medical Society. Several women from the Mid-Tidewater Section were present and Mrs. Hawes Campbell, of Enfield, was elected president of the new sectional organization. Mrs. A. W. Lewis, of Ayletts, was appointed first vice-president and Mrs. Horace F. Hoskins, of Saluda, second vice-president. It is planned that Mrs. Campbell and her two assistants will try to organize local chapters in each county included in the section with their own local chairmen and other necessary officers. Mrs. Campbell will also appoint her own secretary and treasurer. There was much enthusiasm and this new auxiliary promises to be a valuable addition to our State forces.

Mrs. Joseph Bear, who is organization chairman as well as president-elect for the State, presided at this meeting and Mrs. Latane Flanagan, of Richmond, acted as secretary.

Mrs. Southgate Leigh, of Norfolk, represented Mrs. Wm. Lett Harris, State President, who was unable to attend the meeting.

Mrs. Meade Edmunds, President of the Petersburg Auxiliary, was also present in an advisory capacity.

The group lunched together and the business meeting ended in a most pleasant social affair.

**An Addition to the S. M. A. Auxiliary.**

The Auxiliary to the District of Columbia recently joined the Southern Medical Association group. Women from Washington attending the Southern Medical meeting, held in Richmond in November, were so pleased with the spirit of the meeting and the splendid work being done by the Southern Medical Auxiliary that they were moved to cast their lot with us in Dixie. Thrice welcome to our D. C. sisters!

**The Norfolk Auxiliary,**

At its January meeting, decided to take a booth at the Mardi Gras, an affair being sponsored by "The Colonial House," a Norfolk Museum. They are making plans for raising funds in this way for their work this year. One of the attractions to their booth will be a series of moving pictures illustrating different phases of health work in the State and elsewhere.

**Board Meeting.**

The next State Auxiliary Board meeting will be held in Norfolk, probably in April. Mrs. James Blake, of Hopkins, Minn., who is our National president, is planning to come to Virginia at that time. This will be her first visit to Virginia and we are looking forward with eagerness to her coming.

**Mrs. Harrell Honored.**

We feel ourselves honored in the fact that Mrs. C. Lydon Harrell, of Norfolk, Va., has been appointed to the National Board as chairman of *Hygeia* for the Northern Division.

**Auxiliary to the Post-Graduate Medical Association of Southern Virginia.**

At a meeting of the Auxiliary, held recently, the following officers were elected: president, Mrs. Phillip Jacobson; vice-president, Mrs. Herbert C. Jones; recording secretary, Mrs. H. M. Snead; corresponding secretary, Mrs. Allen Barker; and treasurer, Mrs. William B. McIlwaine.

At this meeting a linen shower was given the Petersburg hospital, and it was believed that with the materials donated from many sources, the hospital will be in good shape for some time.

# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted:

Eli Lilly & Co.
- Ampoules Pentobarbital Sodium—Lilly 0.5 Gm. (7½gr.)
- Ampoules Sodium Amytal 0.125 Gm. (1⅞ gr.) for Intramuscular Use (Lilly).
- Pulvules Sodium Amytal 1 Grain (Lilly).

National Drug Co.
- Antimeningococcic Serum, two 15 c.c. double and ampoule vials packages.
- Antimeningococcic Serum, one 15 c.c. cylinder package.
- Antimeningococcic Serum, one 30 c.c. double end vial package.
- Diphtheria Toxoid, twenty 1 c.c. vials package (ten immunization treatments).
- Rabies Vaccine—Human (Semple Method), four 2 c.c. syringes and ten 2 c.c. syringes packages.
- Typhoid-Paratyphoid Combined Vaccine, 30 vial package (ten immunizations).
- Typhoid-Paratyphoid Combined Vaccine, 150 vial package (fifty immunizations).
- Typhoid Vaccine, 3 vial package (one immunization).

Schering Corporation
- Neo-Iopax
  - Ampoule Solution Neo-Iopax, 20 c.c.

Sharp & Dohme, Inc.
- Antimeningococcic Serum, 30 c.c syringe package.

PROPAGANDA FOR REFORM

Tolerances for Arsenic, Copper and Lead in Foods.—The Committee on Foods reports that arsenic, copper and lead compounds are highly toxic. Foods

may be dangerously contaminated with these elements by insecticide sprays, chemicals used in the manufacture of foods, factory processing equipment, and other means. Proper precautions should be taken in the culture, treatment, preparation, processing, packing, manufacture or preservation of foods that they shall not be contaminated with arsenic, copper or lead compounds. Foods to be eligible for acceptance shall not contain arsenic, copper and lead in excess of the tolerances established by the United States Department of Agriculture. (Jour. A. M. A., November 4, 1933, p. 1483.)

Lash-Lure.—There have been sixteen cases of severe untoward effects reported following the use of a single product called "Lash-Lure." This preparation is an aniline dye having for its base probably either paraphenylenediamine or paratoluylenediamine or some closely related substance. Every physician, and practically every responsible beauty parlor, knows the risk that is run in the application of dyes of the aniline type to the hair of the scalp. It has long been good beauty parlor practice to insist that persons who are to be subjected to an aniline hair dye should be tested for sensitivity to that product. Because of the irritating effects of such dyes, there is no justification for the use of so dangerous a substance around the delicate tissues of the eye. Cosmetics are under no national control. The Lash-Lure tragedies emphasize the need of some sort of national control over the sale of cosmetics. (Jour. A. M. A., November 11, 1933, p. 1566.)

# Book Announcements

**Medicine in Virginia in the Nineteenth Century.** By WYNDHAM B. BLANTON, M. D. The third and last book of the series published under the auspices of the Medical Society of Virginia. Richmond. Garrett and Massie. 480 pages, with illustrations. Price, $5.00 to members of the Medical Society of Virginia.

Medicine in Virginia in the Nineteenth Century, the third volume of the history of medicine in the "Old Dominion," has recently come from the press and is a notable achievement.

The three volumes record the history of the medical profession as it performed its duties to the Commonwealth of Virginia, from the settlement in 1607 until the opening of the present century. The work was authorized by the Medical Society of Virginia in 1926-27. and under the authorship of Dr. Wyndham B. Blanton, of Richmond, two volumes have appeared and have received high praise from the medical press of the country and from numerous medical readers.

In attempting a brief review of the third volume, one may be pardoned if one shows a bit of partiality for it. This may be due, somewhat, to the fact that it records more recent events, portrays more modern conventions and institutions, and describes men of note nearer to our day and time, in the realm of medical history in Virginia. In this volume one may note with keen interest and satisfaction, the march of medicine through a century; approaching the opening of the twentieth century the genius of modern-medicine reflects achievements of great promise. These achievements have come to notable fruition in the first three decades of the twentieth century—the days of unprecedented advance in the art and science of medicine. No where, probably, between book-covers, may so striking a story in contrasts in medical progress be found.

Culled from innumerable medical publications of the century, from public and private documents, from the transactions, minutes, papers. addresses, and lectures emanating in medical meetings and societies, from accomplishments and achievements of prominent physicians and personalities of the period, the material of this book has been foregathered and skillfully written into an interesting volume. The publisher will necessarily produce a limited number. The edition, one may dare say, will be quickly absorbed by purchasers. This, and its companion volumes, will become more and more difficult to obtain. Before many years this series of books on medicine in Virginia will be rare and of high value. Every doctor, as well as dentist and pharmacist, who cherishes the history of medicine in this State, will naturally wish this and the other books of the series for his library.

The book possesses a wealth of historical medical material. To itemize here for our readers the subjects treated in the various chapters may be worth while as showing the scope of the work. It opens with a chapter on medical history of the 19th century in Virginia; then follows the story of medical education; the medical colleges; the medical societies; the medical journals; the progress of medicine and surgery; the development and expansion of specialism, with side lights on men and events; the sketch of the allied professions of dentistry and pharmacy; the leech-like grip of certain "cults" that flourished in Virginia; the hospitals, especially, of the Civil War period and the influence of strong personalities in shaping hospital-history in this State; the epidemics in Virginia; the description of medicine in the times of Confederacy; Virginians in the medical service of the Military and Public Health services of the United States; Virginia doctors as authors and their books; the

heritage of the medical career as shown by physicians of colonial families as they follow the profession from one generation to another; Virginians in medicine in other States; medical fees and practices of the period; Civil War surgeons; and medical legislation.

The book contains 500 pages. It is seven and one-half by ten and one-half inches, well bound and in pleasing type and of good paper. There are many interesting and rare illustrations. There are numerous engravings of the prominent Virginia physicians of the century. There are reproductions of the title page of publications and books of the period. Rare pictures of Confederate State Hospitals are displayed, and photographs and prints of the staffs of these hospitals are given. Pictures of the death-scene of General "Stonewall" Jackson and General Robert E. Lee are found in this medical record.

This, and its companion volumes, constitute a real contribution to American medical history. The interest and value of the material presented takes on more than local form, for what was inacted graphically in Virginia in medicine was quite typical of medicine in other regions in the country through the period of the nineteenth century. But there is that unique background that only Virginia can present in the period before, during and following the Civil War. In this regard, alone, this volume is of special value. Here is found a list of the medical officers of the Confederate States Army.

Alexander G. Brown, Jr.

**The Story of Childbirth.** By DR. PALMER FINDLEY. Doubleday, Doran & Company, Inc., Garden City, New York. 1933. Octavo of 376-xx pages. With Many Illustrations. Cloth. Price, $3.00.

Dr. Palmer Findley is eminently qualified to write the Story of Childbirth. For years he has been a leader in the practice of obstetrics and gynecology, and a crusader for the better teaching of obstetrics. He is a Fellow of the American Gynecological Society and the American Gynecological Society and the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, and a past president of the latter. He was one of the founders of the Central States Association of Obstetricians and Gynecologists. Besides this he was an active spirit in the White House Conference on Child Health and Protection. This book seems to be the fruit of his labors in the White House Conference as it embodies many of the findings of that body.

As a background for the picture of present-day obstetrics, he has given us several chapters of primitive obstetrics gathered from mythology, obstetrics in ancient times and among more modern savages. There are several apparent contradictions, but then obstetrics itself is full of contradictions and perhaps they could not be helped. We are told in the text that childbirth among primitive peoples is a simple affair. The mother picks out a convenient brook, has her baby, bathes it and catches up with the tribe on its march. In early times, the North American Indians delivered alone in a secluded spot, washed themselves and their babies, and proceeded with their accustomed duties as if nothing had happened. In New Zealand, Central Africa, etc., on the other hand they make a public display of accouchement. The pictures that are shown of women being strung up to trees, or being tossed in blankets or otherwise pommelled about gives one an entirely different impression. Unfortunately there are no statistics available to help the reader to form an opinion as to the relative frequency of the "tree obstetrics" as compared to the "brook-side" technique. Our author, however, does not paint as rosy picture of primitive obstetrics as do most writers on this subject.

In chapter VI we are told to what extremes women the world over do to avoid the curse of sterility. These means were always grotesque and often repulsive. The same chapter shows the prevalence of criminal abortion. The oldest medical treatise in existence treats of it, and geographically it extends from the savages of Samoa to highly civilized peoples of Europe.

The chapters on Death of Pain, the Pestilence Carrier of the Lying-in-Chamber and the Lost Art of Obstetrics are exceptionally good. In the chapter on Birth Control, Dr. Findley gives the doctor's point of view. In chapter XII the author attempts to tell in a simple way something of the development of the fetus. This is difficult to do and the chapter falls below the standard of the rest of the book. We cannot agree with him that "menstruation is but a preparatory process for pregnancy." The preparatory process precedes menstruation, and menstruation occurs when pregnancy does not take place.

The book is exceptionally well illustrated.

The typesetting and proof reading in contrast, seem to have been hurriedly done. Eclampsia is spelled with an "x". Dr. De Normandie's name is spelled incorrectly and the father of anatomy has acquired an extra letter in his name. Poor old Eufame Macalyane who was burned at the stake in Edinburgh for trying to get relief from the pains of childbirth is re-christened Agnes Sampson.

If the purpose of the author is to get the public more intelligently interested in the obstetrics as it is taught and as it is practiced he has done well. I tried it out on several of my patients and they were delighted with the book.

M. P. R.

**Mental Hygiene in the Community.** By CLARA BASSETT, Consultant in Psychiatric Social Work, Division on Community Clinics, the National Committee for Mental Hygiene, Inc. New York. The Macmillan Company. 1934. Octavo of 294 pages. Cloth. Price, $3.50.

Miss Bassett is consultant in psychiatric social work of the National Committee on Mental Hygiene. She has written a very useful book and one that is instructive and interesting from the first page to its ending on the three hundred and eighty-sixth page. Too much written on mental hygiene has been of a hodge-podge character, sentimental, unrelated to reference and not backed by sufficient experience. None of this applies to "Mental Hygiene in the Community."

Miss Bassett has written a non-personal book, handling the various divisions of mental hygiene in a manner enlightening, accurate and still conducive to thought. Mental hygiene is treated in its relation to medicine, nursing, social service agencies, delinquency and law, parental education, the pre-school child, education and teacher training, the church and theological training, industry, recreations and psychiatric institutes and agencies. The book is complete, probably the most complete of any book on the subject. It should act as a reference book for students of mental hygiene, but it would also serve as good reading for anyone interested in the human being and his development in society.

The chapter on delinquency and law should be laid before the eyes of every lawyer so that he would, speaking of delinquents, cease to think "that the proper attitude to take is that of a harsh and bulldozing exponent of the heavily-handed rigidities of law."

B. R. T.

**Annual Report of the Surgeon General of the Public Health Service of the United States.** For the Fiscal Year 1933. United States Government Printing Office. Washington, D. C. 1933. Octavo of 128 pages. Cloth. For sale by the Superintendent of Documents, Washington, D. C. Price, 75 cents.

According to this report health conditions in most of the countries of the world were generally good during the calendar year 1932 as compared with preceding years. In the United States, the general death rate was the lowest ever recorded. Infant mortality and the death rates for tuberculosis, diphtheria, and typhoid fever also reached new low records. There were no unusual widespread epidemics, and the principal increases in the death rates were for cancer, heart disease, and other so-called "degenerative diseases." The birth rate in the United States continued to decline.

This book also contains full reports on the Divisions of Scientific Research, Domestic (Interstate) Quarantine, Foreign and Insular Quarantine and Immigration, Sanitary Reports and Statistics, Marine Hospitals and Relief, Venereal Diseases, Mental Hygiene, and Personnel and Accounts.

**Annual Report of the Surgeon General, U. S. Navy.** Chief of the Bureau of Medicine and Surgery. To the Secretary of the Navy. Concerning Statistics of Diseases and Injuries in the United States Navy. For the calendar year 1932. United States Government Printing Office. Washington. 1933. Octavo of 173 pages. Paper. For sale by the Superintendent of Documents, Washington, D. C. Price, 15 cents.

The health of the Navy for the calendar year 1932 shows an improvement in all phases as compared with 1931. There were 371 deaths from all causes, giving a rate of 3.35 per 1,000. Strange as it may seem, motor-vehicle accidents were the leading cause of death in the Navy for the year 1932, as it was in 1930 and 1931. Drowning continues to remain in the second place.

**Protection of Motherhood and Childhood in the Soviet Union.** By DR. ESTHER CONUS, Chief Physician of the Dispensary of the Institute. Translated by VERA FEDIAEVSKY. People's Commissariat of Health of the R. S. F. S. R. State Research Institute for the Protection of Motherhood and Infancy. State Medical Editorship. Moscow, Leningrad. 1933. Octavo of 117 pages. Paper.

**Proceedings of the Twenty-seventh Annual Convention of the Association of Life Insurance Presidents.** Held in the Waldorf-Astoria. New York, N. Y. December 7 and 8, 1933. Octavo of 259 pages. Paper.

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# Editorial

**A Convincing Answer.**

Elsewhere in this issue of the Monthly the Executive Council of the Medical Society of Virginia has replied to an amazing pamphlet said to have been written and circulated by Messrs. Shirley Carter and W. I. Wheary, lay members of the Special Board of the Western State Hospital. Controversies of this character are distasteful to physicians generally, but in this instance principles are involved that make it incumbent upon every member of the medical profession of Virginia to read the statement of the Council and to support the position already taken by the Society.

**Danger of Amidopyrin and the Barbiturates.**

In view of the astonishing multiplicity of synthetic remedies that are now being offered to the medical profession, it is not surprising to encounter from time to time new drug idiosyncrasies. For a long time it has been well known that a drop of cocaine in the eye may occasion alarming symptoms, or that a single dose of antipyrin, quinin, belladonna or the continued use of arsenic or the compounds of iodin and bromin may be followed by marked and unexpected skin eruptions.

Latterly we have learned that carbon tetrachlorid and cincophen may produce serious and often fatal liver damage. We are now warned of danger from another quarter—old friends, the barbiturates, and what until now has been held the most innocent of analgesics, amidopyrin, are under suspicion.

If the opinion of Dr. C. H. Watkins of the Mayo Clinic in regard to the susceptibility of a few individuals to these preparations is confirmed, we must have in mind in future in administering these drugs the possibility of alarming damage to the bone marrow and the likelihood of provoking neutropenia, one of the most serious clinical pictures known to medicine.

Watkins advises that in all cases where the prolonged use of these preparations is contemplated periodic examinations of the blood should be made in order to discover early any significant depression in the white count.

**Red Medicine.**

Some time ago the American medical profession was much exercised over a report of medical conditions in this country purporting to deal with the cost of medical care and offering recommendations some of which at least were suspiciously suggestive of the socialization of medicine. The initial shock which this report gave the medical profession is no secret. Quickly recovering it settled down to the concerted policy of defeating all radical suggestions by an attitude of studied indifference. More might have come of this report had not public attention at that time been diverted by

other and more revolutionary events outside the field of medicine. In the meantime the Medical Society of Virginia studied the report through a duly appointed committee and in convention assembled approved only those recommendations which in its judgment embodied the salutary features of the report. At the same time organized medicine in the State gave an even more emphatic rebuke to socialization by refusing to have anything to do with Federal Emergency Relief.

It is unlikely that the present lull in the interest of the public will continue. A little reflection convinces one that our recent medical history shows many obvious trends toward the socialization of medicine in this country—enlarging dispensary services, enormous facilities for the hospitalization of war veterans, the popularity of group practice, the growth of health insurance, the prevalence of contract practice, and the expanding functions of the public health service. The forces directed at the socialization of health in this country are deep rooted and despite our present complacency promise to grow and continually reassert themselves.

Not the least important of these forces is an insidious propaganda aimed at arousing public sentiment in favor of a revolution in our American method of medical practice. *Red Medicine** by Sir Arthur Newsholme and John A. Kingsbury recounts in book form the results of an investigation financed by the Milbank Fund. It gives an exceedingly instructive and interesting account of medicine in Soviet Russia where the socialization of all health agencies now appears to be complete. The book is intended for popular consumption and in its latter chapters undertakes to contrast, often unfavorably, our system of practice with that of the Red Republic. Much is to be learned from the Russian experiment in the systematization of health measures. Physicans generally may resent pressure brought to bear by influences outside the ranks of their own calling, but they will do well to study all innovations which attempt to bring adequate medical attention within the reach of every individual regardless of class or economic status.

*Published by Doubleday, Doran and Company, New York, 1933.

**Wanted—More Advertisers.**

The income of the Monthly from advertisements has fallen off to about one-half of what it was formerly and by that much the publication has become an increased drain upon the ebbing finances of the Society. A curtailment in the number of pages we are now able to publish has been an inevitable consequence. If this situation was thought to be entirely dependent upon present economic conditions and therefore subject to no improvement until these conditions are changed words would be wasted in speaking of the matter at this time, but it is believed that the membership of the Medical Society of Virginia can do much now to arrest this progressively serious and hampering reduction in an important source of income to the Monthly. Former advertisers must be induced to return to the patronage of the Monthly. New advertisers must be secured. Pressure can be exerted from various directions by an alert and interested membership. Scan the advertising pages of this issue of the Monthly. Notice the old friends that have gone. Inquire why these friends no longer advertise. Interest yourself in securing for us advertisements from your own community. The Monthly enjoys a wide circulation, going to more than 1,800 members of the Medical Society of Virginia alone. Continue to patronize those who have loyally continued to support us.

# Department of Clinica Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Beginning of New Course in Prenatal and Postnatal Care.**

A circuit of post-graduate courses conducted for the Joint Committee on Prenatal and Postnatal Instruction by its Field Clinician, Dr. M. E. Lapham, began on January 15th on the Peninsula, the eighth circuit of these classes since Dr. Lapham's work began. In the first week more than sixty physicians were enrolled and attended the opening meetings.

Detailed data in regard to the time and places of meeting, the enrollments and visitors and committees in charge follow:

Richmond: The class for colored physi-

cians meets on Mondays at 10:30 A. M., in the lecture room of St. Philip Hospital. Enrollments: Drs. J. H. Blackwell, F. D. Brown, F. J. Brown, S. A. Brown, W. M. T. Forrester, Z. G. Gilpin, V. J. Harris, I. A. Jackson, J. M. Newman, A. A. Tennant. Visitors: Drs. D. W. Davis, H. S. Martin, G. W. White.

Richmond: The class meets on Tuesdays at 2:30 P. M. in the lecture room of St. Philip Hospital. Enrollments: Drs. J. J. Anderson, R. D. Bates, Greer Baughman, Joseph Bear, Hawes Campbell, R. S. Faris, T. F. Gill, M. H. Harris, H. B. Hinchman, P. D. Lipscomb, L. C. Lush, A. C. Monroe, W. H. Parker, J. K. Richardson, H. C. Rucker, J. T. R. Sweeney, A. E. Turman, J. W. Turman, J. A. Wright. Visitors: Drs. P. Q. Daniel, M. H. Eames, Horace Hoskins, A. W. Lewis.

A particularly encouraging feature about this group is that fourteen of the enrolled members were members of the previous class in Richmond in the summer of 1932.

Another encouraging feature was the following paragraph of a letter from the Secretary of the Mid-Tidewater Medical Society, Dr. M. H. Harris:

"There were eight of our men present at the lecture this evening, and I know of two more who propose to take the course. I have been a little lukewarm about the course myself but after hearing the first lecture today I know that I cannot afford to miss any of them."

Newport News: The class meets on Wednesdays at 4:00 P. M. in the library of the Elizabeth Buxton Hospital. Local committee in charge of membership and clinical material: Dr. W. R. Payne, Chairman, Drs. B. E. Hunt and J. W. Sayre. Previously reported enrollments: 5. Aditional enrollments: Drs. G. C. Amory, O. T. Amory, B. L. Carleton, C. B. Courtney, W. S. Snead. Visitor: Dr. Antonio Gentile.

Williamsburg: The class meets on Thursdays at 2:30 P. M. in the Bell Hospital. Previously reported enrollments: 5. Additional enrollments: Drs. J. D. Clements, E. B. Kilby. Visitor: Dr. S. M. Knight.

Newport News: A class for the colored physicians of Newport News and Hampton meets on Fridays at 11:00 A M. in the Whittaker Hospital. Organization of the group in charge of Dr. R. A. B. Lloyd. Enrollments: Drs. Burl Bassette, Alexander C. Davis, W. P. Dickerson, E. C. Downing, Floyd W. Greene, W. T. Jones, R. A. B. Lloyd, I. B. McEachin, Anderson T. Scott and W. D. Young.

Hampton: The class meets on Fridays at 3:30 P. M. in Dixie Hospital. Local committee in charge of membership and clinical material: Drs. B. E. Hunt, E. S. Jones, W. P. Smith and Robert H. Wright, Jr. Enrollments: Drs. W. H. Howard, Harry B. Howe, Benjamin E. Hunt, Eldred S. Jones, William E. Knewstep, C. O. Moody, Paul Jones Parker, Willard P. Smith, O. W. Ward, Robert H. Wright, Jr.

**Short Course in Clifton Forge.**

Eleven physicians who were members of Dr. Lapham's class in Clifton Forge attended the two weeks' short course on the average of four-fifths of the time, an exact percentage rate of 81.8. Six other physicians and ten nurses joined them as visitors. All seven of the members who answered the office inquiry as to their opinion of the course rated the lecture as excellent or good and expressed their satisfaction with the value of the course and their interest in future similar courses in other subjects. Three considered the clinics excellent or good and three rated them lower. Pediatrics, as usual, was the preferred choice of future study.

Dr. R. P. Hawkins, Jr., Secretary of the Alleghany-Bath County Medical Society, who was instrumental in organizing the Clifton Forge course, wrote the following comment:

"I wish to take this method of expressing to you and to Dr. Lapham the entire satisfaction of all the physicians of this community in the post-graduate instruction recently completed here. I have taken each man individually, and I have found a unanimous sanction in the work done by the Pre- and Postnatal clinic. Everyone thoroughly enjoyed Dr. Lapham's lectures and all feel that they have profited by them."

**Future Courses.**

Beginning on March 26th and extending through June 1st, the Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction will be assigned to the North Shenandoah Valley with classes in a circuit composed of Harrisonburg, Luray, Front Royal, Woodstock and Winchester.

From that time until September 28th, a period of seventeen weeks, courses in circuits of five centers extending for ten weeks or in single classes for two weeks' intensive study, may be organized wherever they are desired. It is anticipated that some of the classes may be requested by the medical societies of

Northern Virginia, the only section yet unserved.

**Second Commonwealth Fund Report.**

Last February in these columns the estimate of the Commonwealth Fund, through whose generosity the major expense of the Virginia program of instruction in prenatal and postnatal care has been furnished, was set forth in an excerpt from the annual report. The second statement of the Fund as it appears in the annual report of 1933 follows:

"More intensive instruction in the single field of obstetrics is being spread throughout rural Virginia by the Medical Society of Virginia, the Medical College of Virginia, and the University of Virginia, with aid from the Fund. The plan is similar to extension projects in several other states, but the thoroughness with which it is applied makes it distinctive. In the space of something over two years almost every doctor in rural Virginia will have had the opportunity to hear for a small fee a series of ten lectures, with clinical demonstrations, on prenatal care, delivery, and postpartum care. The competent obstetrician who does the teaching is giving full time to the project and is available for consultation in the doctor's office—a privilege which has been eagerly accepted. More than four hundred doctors, both white and colored, have already taken the course; and the Medical Society is thinking of adapting the plan to pediatrics or other subjects of instruction."

George W. Eutsler,
*Secretary, Joint Committee.*

# Proceedings of Societies

**The Alexandria Medical Society,**

At its monthly meeting on January 11th, elected the following officers for the year: President, Dr. S. B. Moore; vice-president, Dr. H. A. Hornthal, and secretary-treasurer, Dr. W. E. Beattie (re-elected). All are of Alexandria.

This Society is much interested in the annual meeting of the Medical Society of Virginia to be held in that city in the Fall and its members are already making plans for the success of this session. Announcements will be made later as to committees and their work.

**The Mid-Tidewater Medical Society**

Held its regular quarterly meeting in the Library Building of the Medical College of Virginia on January 16th. Dr. R. R. Hoskins, Mathews, was installed as president. Dr. M. H. Harris, West Point, is secretary. Several matters of business were discussed at this meeting. Dr. Southgate Leigh, Norfolk, chairman of the Committee on Group Societies of the State organization addressed the doctors and arrangements were made to have a "skeleton" society in each county. Following this meeting, the members were entertained at lunch at the Westmoreland Club. In the afternoon, the first of the series of prenatal and postnatal clinics for this group was conducted by Dr. M. E. Lapham, field clinician.

Dr. P. Q. Daniels, Deltaville, Dr. A. L. Finch, Urbanna, and Dr. Hawes Campbell, Jr., Hanover, were recently elected to membership in this Society.

**Accomack Medical Society.**

At the regular meeting of this Society held at Accomack Courthouse on December 19th, the following officers were elected: President, Dr. A. F. Wood, Parksley; vice-prseident, Dr. J. Fred Edmonds, Accomack Courthouse; and secretary-treasurer, Dr. John W. Roberason, Onancock (re-elected).

Drs. Daniel Brown Pierson, Jr., Chincoteague, Daniel S. Fisher, Parskley, and Clay M. Easter, Chincoteague, were admitted to membership in the Society.

The two resolutions adopted by the Medical Society of Virginia and submitted to the component societies were freely discussed. The one pertaining to non-service-connected disabilities of veterans was endorsed, and the one with regard to state and federal emergency relief was tabled as there were no definite opinions expressed by the members present.

A committee was appointed to draft suitable resolutions on the death of Dr. Sydney S. Kellam.

**The Albemarle County Medical Society,**

At its meeting held on January the 11th, elected the following officers for the ensuing year: President, Dr. C. Bruce Morton; vice-president, Dr. E. W. Burton; and secretary-

treasurer, Dr. Kenneth F. Maxcy, all of University.

At this meeting, resolutions were adopted on the death of Dr. John Staige Davis, a past president of the Medical Society of Virginia.

**The Lynchburg Academy of Medicine**

Held its first 1934 meeting on January the 8th, at which time Dr. R. D. Caldwell, Lynchburg, was installed as president. Dr. John Hundley, Jr., of Lynchburg, continued as secretary-treasurer. Dr. J. Edwin Wood, University, Va., presented a very interesting and instructive paper on "Emergencies and Pseudo-Emergencies in Heart Disease."

At this meeting, Dr. J. E. White, business manager of the Virginia Baptist Hospital, was admitted to associate membership and Dr. Edw. B Richie, who recently moved to Lynchburg from Detroit, Mich., was received as an active member.

**Roanoke Academy of Medicine.**

A call meeting of this Society was held at the Roanoke Hospital, December 14th. Members of the hospital staff put on the following program:

Carcinoma of the Colon, Drs. C. Robertson, J. T. McKinney, and T. D. Armistead.

Congenital Pyloric Stenosis, Drs. L. Davis and W. L. Powell.

Encephalography in Cerebral Diagnosis with Illustrative Cases, Dr. T. Spessard.

Report of Two Interesting Cases, Dr. C. P. Eldridge, Raleigh, N. C.

Urea Nitrogen Determination in the Diagnosis of Eclampsia, Dr. I. T. Hornbarger, Hot Springs, Va.

An Unusual Case of Intestinal Obstruction, Dr. H. G. Byrd.

Chronic Progressive Idiopathic Tetany, Dr. R. Morgan.

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At a dinner meeting at the Elks Club on January 8th, Dr. John Neff, of the University, read a paper on renal tumors. Dr. H. E. Jordan, of the University, spoke on the subject "Extra Medullary Blood Formation."

**Officers of Local Societies.**

As a result of the questionnaire recently sent local secretaries, we note the following officers whose names have not previously appeared in this department:

FREDERICKSBURG
*President*—Dr. W. A. Harris, Spotsylvania.
*Secretary*—Dr. E. R. Ware, Fredericksburg.

MECKLENBURG
*President*—Dr. W. L. Varn, South Hill.
*Secretary*—Dr. W. W. Wilkinson, La Crosse.

NANSEMOND
*President*—Dr. E. C. Joyner, Suffolk.
*Secretary*—Dr. C. H. Dawson, Suffolk.

NORTHAMPTON
*President*—Dr. Wm. T. Green, Nassawadox.
*Secretary*—Dr. W. Carey Henderson, Nassawadox.

PATRICK-HENRY
*President*—Dr. J. T. Shelburne, Critz.
*Secretary*—Dr. C. R. Titus, Bassett.

ROCKBRIDGE
*President*—Dr. Howard L. Mitchell, Lexington.
*Secretary*—Dr. E. P. Tompkins, Lexington.

# News Notes

**Dates for Annual Meeting of State Society.**

A committee from the Alexandria Medical Society was present at the Council meeting of the Medical Society of Virginia, on January the 16th, at which time October 9th, 10th and 11th were selected as dates for the sixty-fifth annual meeting of the State Society in Alexandria. This will be our first meeting in Alexandria in over fifty years and we count on a large attendance as well as an interesting meeting.

**The Tri-State Medical Association of the Carolinas and Virginia**

Is to hold its annual meeting in Charlottesville, Va., February 12th, 13th and 14th, under the presidency of Dr. Francis B. Johnson, of Charleston, S. C. The clinical advantages offered by this contact with the University of Virginia should be such as to add greatly to the success of the meeting. The Tri-State is such a popular organization with doctors in this section, that we feel announcement of the dates is all sufficient to secure a large attendance. Detailed information may be secured from its secretary, Dr. J. M. Northington, Charlotte, N. C.

**Committee Appointment.**

Dr. G. F. Simpson, Purcellville, has been appointed by the president as a member of the Public Relations Committee of the Medical

Society of Virginia in place of Dr. J. A. Gibson, Leesburg, who was unable to accept.

**Dr. Stuart McGuire Honored by Faculty of the Medical College of Virginia.**

The faculty of the Medical College of Virginia gave a testimonial dinner to Dr. Stuart McGuire at the Commonwealth Club, Monday, January 15, at 6:30 P. M., in recognition of forty years of continuous service to the college. Happily this occasion was planned at a time when Dr. McGuire is giving to the institution, as chairman of the executive committee of its Board of Visitors, perhaps the most distinguished service of his connection with the college.

Dr. Roshier W. Miller, who has also had forty years of continuous connection with the institution, presided. The brief addresses were: Dr. Stuart McGuire as:

Professor of Surgery (University College of Medicine), by Dr. Robert C. Bryan, *emeritus professor of genito-urinary surgery.*

President (Medical College of Virginia), by Dr. Clifton M. Miller, *association professor of otolaryngology.*

Commander, M. C. V. Unit, World War, by Dr. Joseph F. Geisinger, *former associate in gynecology.*

A Member of the Board of Visitors, by Dr. Douglas Vanderhoof, *member of the Board of Visitors.*

The Educator, by Dr. J. Allison Hodges, *emeritus professor of clinical nervous and mental diseases.*

Counselor and Adviser, by Mr. J. R. McCauley, *secretary-treasurer Medical College of Virginia.*

The Citizen, by Honorable J. Fulmer Bright, *Mayor, City of Richmond.*

The Man, by Mr. William R. Miller, *member Board of Visitors.*

For the Faculty, by Dr. William T. Sanger, President.

In closing, President Sanger presented to Dr. McGuire a silver platter symbolic of the appreciation and affectionate regard in which he is held by the faculty.

Altogether nearly one hundred and fifty were present, including members of the Board of Visitors, the faculty, and their wives.

**Dr. Southgate Leigh Honored.**

At a recent largely attended meeting of the Norfolk County Medical Society, the Society conferred the title of Honorary Member upon Dr. Southgate Leigh, of Norfolk, in recognition of his pre-eminent services in the cause of organized medicine in connection with the local, State and National Associations, of all of which he has been for many years a most active and valued member.

While his professional work has always held first place with him, Dr. Leigh has also been active as a leader in civic affairs and had interest in community welfare to such an extent that a few years ago he was designated by one of the largest of the local welfare clubs as "Norfolk's most distinguished citizen."

**The Gill Memorial Eye, Ear and Throat Hospital**

Announces its Eighth Annual Spring Graduate Course to be held at the hospital, in Roanoke, April 9-14, 1934. Courses will be given in Ophthalmology, Otology, Rhinology, Laryngology, Facio-Maxillary Surgery, Oral Surgery, Bronchoscopy and Esophagoscopy. All lectures, demonstrations and operations will be given at the hospital, and the round table discussions will be held at the Patrick Henry Hotel each day immediately following lunch.

The following are guest members of the faculty: Drs. Perry G. Goldsmith, Toronto, Canada; Webb W. Weeks, New York; Ralph I. Lloyd, Brooklyn; Bernard Samuels, New York; Lyman Richards, Boston; E. B. Burchell, New York; Robert H. Ivy, Philadelphia; H. S. Hedges, Charlottesville; P. Chalmers Jameson, Brooklyn; Joseph C. Beck, Chicago; M. Reese Guttman, Chicago; and George Tully Vaughan, Washington. Drs. E. G. Gill, John A. Pilcher, Jr., J. Lawson Cabaniss, and Mr. Nathan Ridgeway are resident members.

Further information may be received from the Superintendent of the Gill Memorial Eye, Ear and Throat Hospital, Roanoke.

**Lectures and Papers at New York Polyclinic Medical School and Hospital.**

On Monday, January 8, 1934, the following program was presented at the meeting of the Clinical Society:

*Diverticula of the Colon*—Jerome Morley Lynch, M. D. (Attending Proctologist to the New York Polyclinic).

*Oesophageal Diverticulum: Its Diagnosis, Surgical Management and End Results*—Frank H. Lahey, M. D. (Boston), by invitation.

*A Plea for the Alexander Method of Shortening the Round Ligaments for Retroversion of the Uterus*—Louis J. Ladin, M. D. (Attending Gynecologist to the New York Polyclinic).

On Saturday, January 20, 1934—*The Technique of*

*Version*—By Dr. Irving W. Potter, of Buffalo (Consulting Obstetrician to the New York Polyclinic).

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On Wednesday, January 24, 1934—*Diabetes in Children*—By Dr. Frederick M. Allen (Attending Physician to the New York Polyclinic).

**Married.**

Dr. George Glasgow Chiles, Sanford, N. C., and Miss Mae McCleur Gilmore, Olney, Md., November 16th. Dr. Chiles is a graduate of the Medical College of Virginia, class of '26.

Dr. Roy C. Fravel, Woodstock, Va., and Miss Adelaide Rebecca Smith, Clifton Forge, Va., December 24th.

Dr. William A. Runkle, Memphis, Tenn., class of '25, University of Virginia, Department of Medicine, and Miss Louise Evelyn Duke, Grenada, Miss., January 8th.

Dr. Lloyd Eastlack and Miss Muriel E. Reynolds, South Boston, Va., recently.

Dr. Charles S. Venable, former Virginian but for a number of years a surgeon in San Antonio, Texas, and Mrs. Eleanor Herff Johnson, also of San Antonio, December 16th.

**Dr. Randolph Bryan Grinnan, Jr.,**

Of the class of '32, University of Virginia, Department of Medicine, who has been at the Boston (Mass.) City Hospital, moved the first of the year to New York City, where he has received an appointment as assistant resident physician in Doctors Hospital.

**Ground Broken for New Hospital.**

Ceremonies were held in Roanoke, Va., January 16th, marking the beginning of the work on the new veterans' hospital to be built in that city. Ground was broken for the foundation of the building which it is estimated will cost $1,300,000. This is expected to be ready for occupancy in a year.

**Dr. J. L. Cantor,**

Formerly of Petersburg, Va , who interned at Bon Secours Hospital, Baltimore, Md., upon his graduation from the University of Virginia, Department of Medicine in 1932, has recently been appointed senior assistant resident in surgery at the West Baltimore General Hospital.

**Dr. Bruce L. Randolph,**

Richmond, Va., has been appointed physician to the Virginia Electric and Power Company Employees' Association, succeeding the late Dr. H. A. Bullock.

**News Notes From the Medical College of Virginia.**

Dr. J. C. Forbes, associate professor of Chemistry, and Dr. E. C. L. Miller, directing librarian, attended the annual meeting of the American Association for the Advancement of Science at Cambridge, Mass., in December.

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Dr. Arthur J. Cramp, director of the bureau of investigation of the American Medical Association, was the guest speaker at student assembly on January 10th. Dr. Cramp spoke on "Patent Medicines."

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The number of visits to the outpatient department in December, totalled 4,531, an increase of 317 over the same month for last year. The average number of patients handled a day was 181.

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The regular monthly scientific meeting of the faculty and staff was held Thursday, January 11. The program was as follows:

Erythema Arthriticum Epidemicum, or "Haverhill Fever," by Dr. L. E. Sutton, Jr., Discussion by Dr. William B. Porter.

Some Recent Observations, by Dr. J. T. Tucker.

Medical Photography, by Max Freydeck.

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Dr. P. St. L. Moncure, of Norfolk, and Dr. R. H. Fuller, of South Boston, were recent visitors to the college.

**News From Jefferson Medical College.**

The William W. Root Alpha Omega Alpha Lecture was delivered in the College Building, in Philadelphia, on the evening of January 10, by Vilhjamur Stefansson, A. M., Ph. D., LL. D., his subject being "The Friendly Arctic."

**News Notes from the University of Virginia, Department of Medicine.**

The Piedmont Medical Society and the Albemarle Medical Society held a joint meeting at the University of Virginia Hospital on December 13th. The following program was given: Renal Calculi, by Dr. J. H. Neff; Tularemia, by Dr. S. D. Blackford; The Tumor Clinic at the University of Virginia Hospital, by Dr. W. H. Goodwin.

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On January 8th Dr. J. H. Neff spoke before the Roanoke Academy of Medicine on the subject of Tumors of the Kidney; Dr. H. E. Jordan spoke on Extramedullary Blood Formation.

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Dr. E. C. Drash spoke before the Rockingham County Medical Society, meeting in Harrisonburg on January 8th, on the subject of Intrathoracic Neoplasms.

On January 8th, Dr. J. Edwin Wood spoke before the Campbell County Medical Society, meeting in Lynchburg, on the subject of Cardiac Emergencies.

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Drs. A. D. Hart and J. E. Wood gave a joint paper on Rheumatic Fever at the meeting of the Albemarle Medical Society on January 11th.

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On January 13th the Southern Section of the American Laryngological, Rhinological and Otological Society held its annual meeting at the University of Virginia. The program included the following papers by members of the Medical Faculty: Allergy as Related to Otolaryngology, Dr. Oscar Swineford; Roentgen Ray Therapy of Malignant Tumors, Dr. Vincent Archer.

**News Notes from the Duke University School of Medicine.**

The winter quarter of the school of medicine commenced January 3rd, with sixty students in the first year class, forty-three in the second year, thirty-three in the junior and twenty-seven in the senior class.

Students completing their medical course in 1934 have received interneship appointments as follows: J. S. Baker, Mrs. E. B. Easley, F. L. Owens, T. L. Peele, E. M. Rucker and A. R. Smith, Duke Hospital; E. W. Brian, R. Z. Query and W. E. Sharpe, Jr., Henry Ford Hospital, Detroit, Mich.; J. H. Cherry, City Hospital, Goldsboro, N. C.; M. C. Cobey and B. R. Kennon, The Johns Hopkins Hospital, Baltimore, Md.; W. D. Farmer, Grady Memorial Hospital, Atlanta, Ga.; J. S. Forbes and S. J. Margolin, Jersey City Medical Center, Jersey City, N. J.; K. B. Rothey, Fitkin Memorial Hospital, Neptune, N. J.; J. R. Wilson, Albany Hospital, Albany, N. Y., and C. T. Wood, St. Vincent's Hospital, Norfolk, Va.

**Dr. T. S. Jennings,**

Formerly connected with the medical staff at Pine Camp Hospital, Richmond, Va., has located at Waverly, Va., for general practice. He took over the offices and practice of the late Dr. L. O. Vaughan of that place.

**Dr. William G. Talmage,**

Class of '31, Medical College of Virginia, who interned at Cumberland Hospital, Brooklyn N. Y., has recently opened offices at Main Street and Hillside Avenue, Succasunna, N. J.

**Dr. Charles A. Easley, Jr.**

A member of the class of '32, Medical College of Virginia, has located for general practice at Dry Fork, Va.

**Doctors Among Bank Directors.**

Names of the following Virginia doctors have recently been brought to our attention as directors in banks for the coming year: Dr. E. G. Brumback and Dr. Loring Hammer, Luray; Dr. Reid White, Jr., Lexington; Dr. Herbert C. Jones and Dr. C. S. Dodd, Petersburg; Dr. Stuart McGuire, Dr. J. McCaw Tompkins, Dr. J. G. Loving, Dr. R. W. Miller, Richmond; Dr. C. D. Marchant, Harmony Village, and Dr. W. P. Jones, Urbanna.

**Reserve Space Now for Scientific Exhibit in Cleveland.**

Application blanks are now available for space in the Scientific Exhibit at the Cleveland Session of the American Medical Association, June 11 to 15, 1934. The Committee on Scientific Exhibit requires that all applicants fill out the regular application form and requests that this be done as early as convenient.

The final date for filing applications is February 26, 1934. Any person desiring to receive an application blank, should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Ill.

**State Health Department Offers Supply of Bulletins on Prenatal Care.**

An increasing number of doctors are sending in requests to the State Department of Health for literature pertaining to the care of the prenatal patient. The Department is glad to supply this material. Two bulletins entitled *Prenatal Care* and *The Healthy Baby* are of especial interest. Literature concerned with other subjects may also be secured upon request.

**Dr. William R. Jordan**

Has opened offices at the Medical Arts Building, Richmond, where he will limit his practice to the treatment of diabetic patients. Dr. Jordan graduated from the University of Virginia, Department of Medicine, in 1928. After completing an interneship at the Massachusetts General Hospital, he assisted Dr. Elliott P. Joslin, of Boston, until October, 1932, and spent last year in Germany working on carbohydrate and fat metabolism and visiting medical clinics.

**The Southeastern Surgical Congress**

Will hold its fifth annual assembly in Nashville, Tenn., March 5th-7th. The Andrew Jackson Hotel will be headquarters and the lectures and exhibits will be in the War Memorial Building. Many prominent speakers will be on the program.

Information may be obtained from Dr. B. T. Beasley, secretary-treasurer, 1019 Doctors Building, Atlanta, Ga.

**Mrs. B. L. Carter,**

Blue Spring Run, Va., is home again after a visit of several weeks in Illinois.

Misses Marjorie Helen and Margaret Ellen Carter, twin daughters of Dr. and Mrs. B. L. Carter, have resumed teaching after spending the holiday season with their parents.

**Dr. Buckner M. Randolph.**

Who for several years has made his home and practiced in Charlottesville, Va., has returned to his former home, Washington, D. C.

**Squibb Go-Getter Club Winners.**

In accordance with its annual custom, E. R. Squibb & Sons, during the first week of the year, entertained in New York the winners of gold-star honors of the Squibb Go-Getter Club for 1933. The salesmen-winners of gold-star honors are those who have made the best sales records during the club contest which starts in January and closes at the end of November each year. In addition to monetary and honorary awards, the contest winners, as guests of honor, are invited to the home offices in New York for the enjoyment of a special program of entertainment.

The closing event of the celebration was the annual banquet of the Squibb Go-Getter Club at the New York Athletic Club on the evening of January 6th. The guests, more than 100 in number, included the sales managers of the nine Squibb sales divisions of the country, executives, department heads and Canadian representatives.

**Dr. Stephen H. Watts,**

University, Va., has been elected president of the board of directors of the Farmington Country Club, Charlottesville, Va., for the ensuing year.

**Dr. Richard W. Vaughan,**

Richmond, Va., was recently elected worshipful master of Fitzgerald Lodge, No. 299 Ancient Free and Accepted Masons, of this city.

**Committeemen in Kiwanis Club.**

The following doctors of Fredericksburg, Va., have been appointed as members of committees of the Kiwanis Club of that city for the ensuing year: Dr. L. Philip Cox on the boys and girls work committee; Dr. Lee Cooke, also a director, on the underprivileged work committee; and Dr. Sidney L. Scott on the inter-club relations committee.

**Dr. John M. Biedler,**

Harrisonburg, Va., was recently installed as twelfth president of the Harrisonburg Kiwanis Club. He was a member of the Club's first board of directors.

**Dr. William H. Wilmer**

Will retire as director of the Wilmer Institute of Ophthalmology of the Johns Hopkins University on July 1st, in accordance with its age regulation. He has been director of the Institute since its beginning in 1925. Dr. Wilmer is a native of Powhatan County, Va., and an alumnus of the University of Virginia. He plans to continue with his private practice and writing.

**Dr. Euclid Neal,**

Who has been practicing at Big Island, Va., for some time, has moved to Bedford, Va.

**Dr. D. Hunter Marrow,**

Boydton, Va., is spending the winter at Daytona Beach, Fla., as has been his custom for a number of years.

**History of Medicine in Virginia.**

The Third Volume of this most excellent and interesting work made its appearance recently. For the benefit of those who have not yet secured a copy, we would call attention to a review which appears under the heading of Book Announcements in this issue of the Monthly. So familiar to us all are the names of many of the doctors referred to in this volume, that we are sure it will be a most welcome addition to any doctor's library.

**Dr. T. R. Boling,**

Class of '31, Medical College of Virginia, recently connected with Rutherford Sanitarium, Beckley, W. Va., has located for general practice at Grantsville, W. Va.

**New Books in Library. Medical College of Virginia.**

The following are recent additions to the Library, Medical College of Virginia, Richmond, which may be borrowed by members of our Society, the only cost being return postage.

Arey—Developmental Anatomy.
Austin & Hughes—Clothes Moths and House Moths.
Balyeat—Migraine: Diagnosis and Treatment.
Bastedo—Materia Medica.
Bentley—Textbook of Pharmaceutics.
*Bigger—Bacteriology.
Beard—The Future Comes: a Study of the New Deal.
Billroth's Historical Studies of the Nature and Treatment of Gunshot Wounds from the Fifteenth Century to the Present Time.
*Boyd—Pathology.
Bremer—Histology.
British Med. Assoc. Pamphlet—A General Medical Service for the Nation.
British Med. Assoc. Pamphlet—The Essentials of a National Medical Service.
Cameron & Gilmour—Biochemistry in Medicine.
Cooper—Course in Practical Pharmacy.
Cooper—Dispensing for Pharmacy Students.
Cooper—Pharmacy.
Cooper—Practical Pharmaceutical Chemistry.
Cooper—Textbook of Pharmacognosy.
*Cunningham—Anatomy.
*Da Costa—Modern Surgery.
Dagen—Le Dentiste d'Autrefois.
Darwin—Autobiography.
Chadwick—Woman's Periodicity.
Cummings—The Bed-Bug; Its Habits and Life History.
*De Lee—Obstetrics
Dorrance—Operative Story of Cleft Palate.
Drewitt—Life of Edward Jenner.
Drummond—Relative Values of Cod-Liver Oil from Various Sources.
Dublin & Bunzel—To Be or Not To Be: A Study of Suicide.
Oettingen, W. F., von—Therapeutic Agents of the Quinoline Group.
Oliver, J. R.—Psychiatry and Mental Health.
Phelps & Kephuth—Diagnosis and Treatment of Postural Defects.
Power D'Arcy—Short History of Surgery.
Reid, W. D.—Teaching Methods in Medicine.
Royal Institute of British Architects—Report with Appendices.
Sewell, A. J.—The Dog's Medical Dictionary.
Small, J. K.—Manual of Southeastern Flora.
Smart, W. K.—English Review Grammar.
Stanton & Fletcher—Melioidosis.
Stopes, M. C.—Roman Catholic Methods of Birth Control.
Thoma, K. M.—Food in Health and Disease.
Thoms, Herbert—Chapters in American Obstetrics.
Treadwell, F. P.—Analytical Chemistry.
Turner, A. L.—History of the University of Edinburgh, 1883-1933.
White, W. A.—Outlines of Psychiatry.
Wiesner, B. P., and Sheard, N. M.—Maternal Behavior in the Rat.
Williams, E. M.—The Health of Old and Retired Coal Miners in South Wales.

*These books are on the refedence shelf and cannot be loaned at present.

**Dr. Benjamin Rawles, Jr.,**

Formerly of Richmond, Va., who has had a service at the New York City Memorial Hospital, has now gone to New Jersey where he has received an appointment at the Jersey City Medical Center. Dr. Rawles is an alumnus of the University of Virginia, Department of Medicine, class of '30.

**Dr. Charles W. Putney,**

Formerly of Staunton, Va., has re-opened his offices in the Professional Building, that city.

**Dr. W. D. Kendig,**

Kenbridge, Va., has been appointed by Governor Peery as a member of the board of visitors of the Medical College of Virginia, succeeding the late Dr. E. L. Kendig.

**Doctors as Officers at the Children's Memorial Clinic.**

Dr. Lee E. Sutton has just been re-elected president of the Children's Memorial Clinic, Richmond, Va., for another year. Dr. Ramon Garcin was re-elected vice-president, and Dr. St. George Grinnan was re-elected to the board. Dr. Howard Masters were elected as a new member of the board.

**For Sale—**

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One large and one small McCaskey Record System. Will be sold separately. Address No. 408, care the Monthly. (*Adv.*)

# Obituary Record

**Dr. Edwin Lawrence Kendig,**

Prominent surgeon of Victoria, Va., died at the University Hospital, January 15th, of heart disease complicated by rheumatic fever. He had been critically ill for several weeks. Dr. Kendig was fifty-two years of age and a graduate of the Medical College of Virginia in 1905. He interned at the Retreat for the Sick, Richmond, and later took post-graduate work in Chicago. Dr. Kendig had been located at Victoria since 1907 where he and his brother, Dr. W. D. Kendig, operated a hospital. He was a member of the American College of

Surgeons and of the Board of Visitors of the Medical College of Virginia. Dr. Kendig was for twenty-five years division surgeon for the Virginian Railway and was secretary of the Lunenburg County board of health for two decades. He had been an active member of the Medical Society of Virginia since his graduation and had served as a member of its Council and on various committees.

Dr. Kendig served two terms in the Virginia Senate. He had been chairman of the Lunenburg County Democratic Committee for twenty years and representative from the Fourth Congressional District on the State Democratic Committee for some time.

His wife and one son, who is a medical student at the University of Virginia, survive him.

### Dr. Allan Moore Kimbrough

Died at his home in Norfolk, Va., January 15th, following a heart attack. He was thirty-seven years of age and a graduate of the Medical College of Virginia, class of 1921. Dr. Kimbrough was formerly of Richmond, Va. After post-graduate work in New York, he located in Norfolk where he specialized in orthopedic surgery. His wife and two children survive him.

### Resolutions on Death of Dr. John Staige Davis.

At a meeting of the Albemarle Medical Association held on January 11, 1934, the following resolutions were adopted:

WHEREAS, God in his infinite wisdom saw fit to remove from our midst on September 21, 1933, our friend and member, Dr. John Staige Davis,

BE IT RESOLVED, That in the death of Dr. Davis this Society lost one of its most beloved and valued members. John Staige Davis was born at the University of Virginia on June 24, 1866, the son and the grandson of professors in that institution. He received the degree of Master of Arts in 1888 and Doctor of Medicine in 1889. After further study in the Universities of Berlin and Vienna, and a brief residence in New Orleans, where he was a member of the visiting staff of the Charity Hospital, he returned to his Alma Mater in 1893, where he was successively Instructor in Medical Biology and Pathology, Adjunct Professor of Pathology and Hygiene and Professor of Practice of Medicine. The latter position he filled with distinction from 1900 until his retirement due to ill health.

Dr. Davis was a member of Phi Beta Kappa and Alpha Omega Alpha Honorary Societies, a member of the American Academy of Medicine, of the American College of Physicians and a past President of the Medical Society of Virginia.

Dr. Davis' life and achievements impressed themselves deeply upon members of the Albemarle Medical Society, by whom he was greatly beloved for his unfailing courtesy and universal kindliness and admired for his scholarly attainments and his skill as a physician. His life was marked by a singularly high devotion to duty and conscientious service to mankind. Our Society keenly feels the loss of this distinguished member.

BE IT FURTHER RESOLVED: That a copy of these resolutions be spread on the minutes of the Society, a copy sent to the VIRGINIA MEDICAL MONTHLY and a copy to the family.

### Resolutions on the Death of Dr. Sidney Sheppard Kellam.

WHEREAS, In the providence of God Almighty, we are called upon to mourn the untimely death of our colleague and fellow member, Dr. Sidney Sheppard Kellam, we take this occasion to express our appreciation of his high character, mental attainments, and eminent qualities as a physician.

He was graduated from the University of Virginia Medical School in 1898, served with honor as a member of his county, state and national societies, and was active in all matters of civic pride.

We have learned of his death with profound regret, and therefore, be it

RESOLVED, That these resolutions be spread upon the minutes of the Northampton Co. Medical Society; that a copy be sent to the bereaved family; a copy to the VIRGINIA MEDICAL MONTHLY, and that they be published in the county papers.

W. J. STURGIS, M. D.,
G. W. HOLLAND, M. D.,
*Committee.*

### Resolutions on the Death of Dr. Wm. W. Wilkins.

WHEREAS, In the providence of God Almighty, we are called upon to mourn the death of Dr. Wm. W. Wilkins, an honorary member of our society, we recall to mind his high character and the esteem with which he was held by his patients and his fellow associates in his profession.

He was graduated from the College of Physicians and Surgeons in Baltimore, Md., in 1874. He practiced his profession faithfully in Northampton county until his retirement, about twenty-five years ago. He was considered a leader in his work, both before and after his retirement.

We learn of his death with profound regret, and therefore,

BE IT RESOLVED, That these resolutions be spread upon the minutes of the Northampton County Medical Society, a copy sent to the bereaved family, a copy to the VIRGINIA MEDICAL MONTHLY, and that they be published in the county papers.

W. J. STURGIS, M. D,
G. W. HOLLAND, M. D.,
*Committee.*

### Dr. Thomas Alsop,

Formerly of Richmond, Va., died in Sydney, Australia, January 15th, after several years of ill health He was sixty-one years of age and graduated from the University of Virginia, Department of Medicine, in 1895. Dr. Alsop formerly practiced in New Jersey but, on account of ill health, retired from active practice several years ago. It was with the hope of regaining his health that he was on the present trip with a doctor friend.

### Dr. Elbert W. Ross,

Sugar Grove, Va., died November 5, 1933, of pneumonia. He was sixty-seven years of age.

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# Virginia Medical Monthly

**OFFICIAL PUBLICATION OF THE MEDICAL SOCIETY OF VIRGINIA**

Sixty-Fifth Annual Meeting, Medical Soclety of Virginia, Alexandria, Fall 1934

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RICHMOND, VA., MARCH, 1934

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*continued from last month*

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*to be continued*

*J. C. Drummond and T. P. Hilditch: The Relative Values of Cod Liver Oils from Various Sources, His Majesty's Stationery Office, London, 1930

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## BRONCHOSCOPY AND ESOPHAGOSCOPY: REPORT OF CASES.*

E. T. GATEWOOD, M. D.,
and
THOS. E. HUGHES, M. D.,
Richmond, Va.

Frequently, there are no immediate signs or symptoms of foreign body in the air and food passages except the initial spasm during the act of inspiration or of swallowing the object, and years may pass before any symptoms develop. There is usually choking or coughing with the entrance of the foreign body, and these signs seen in a child while playing with objects are quite ominous and should always be investigated for foreign body. Sometimes, but not always, there is a sticking sensation if the object be sharp. There are no absolutely diagnostic symptoms of foreign body in the esophagus. Dysphagia is the most constant complaint. There may be pain or the sensation of a foreign body. Dyspnea is sometimes produced from pressure on the air passages by a foreign body in the esophagus. And, occasionally, a tracheo-esophageal fistula is produced as a result of pressure necrosis.

A foreign body in the larynx produces an initial laryngeal spasm, followed by wheezing respiration, croupy cough and varying degrees of impairment of phonation.

Tracheal foreign bodies are usually movable, of which movement the patient is conscious. Cough, dyspnea and the "asthmatoid wheeze" are usually present; however, the "audible slap" and "palpatory thud" are pathognomonic of foreign body in the trachea. A foreign body in the bronchus is usually accompanied by the initial laryngeal spasm and, if it is organic, such as a peanut kernel, bean, pea, grain of corn, etc., a diffuse, purulent tracheobronchitis usually develops very quickly in young children. If the foreign body is metallic, there may be no sign nor symptom, except the initial laryngeal spasm, for a long period, though cough and purulent expectoration ultimately result. Limitation of motion of the lung on the affected side if the foreign body is metallic is an important sign, but no explanation is offered for this peculiarity.

A foreign body that almost but not quite fills a main bronchus will admit air on inspiration but block it on expiration (due to the bronchi being smaller in calibre on expiration than on inspiration). This produces an obstructive emphysema and a lower diaphragm on the affected side, with the heart displaced to the opposite side on expiration. However, the heart returns to practically its normal position during inspiration. The roentgenogram shows this very plainly, as the affected side contains more air than the normal side at full expiration. For this reason, Dr. Jackson says that for many years roentgenologists diagnosed the foreign body on the wrong side. In order to show this properly, a picture should be made at the end of inspiration and at the end of expiration.

In an obstructive emphysema, inspection and palpation show less movement on the affected side; percussion gives a hyperresonant note, and auscultation shows diminished breath sounds and the absence of rales. Rales will be heard on the opposite side if sufficient bronchitis be present.

If the foreign body completely obstructs a bronchus both on inspiration and expiration, air is absorbed from the lung and an obstructive atelectasis results. In this condition, there is an absence of expansion on the affected side, flatness or percussion and an absence of breath sounds. The diaphragm remains constantly higher than on the opposite side. A compensatory emphysema is produced on the opposite side. X-ray films show the affected side dense, and the heart displaced towards the same side where it remains. This condition is analogous to collapse of the lung following general anesthesia, when the bronchus becomes plugged with mucus. If the bronchus has been plugged only a short time, the atelectasis begins to clear up in half an hour after uncorking the bronchus. These conditions are caused frequently by organic foreign bodies that swell, though it may be caused by any variety of for-

*Read before the Virginia Society of Ophthalmology and Otolaryngology, Harrisonburg, Va., May 6, 1933.

eign body. A foreign body that does not become impacted may move from the trachea into one bronchus and then into the other.

Diagnosis is made by the history, physical findings, the roentgenogram and endoscopy.

As said previously, when a child strangles or coughs while playing with any kind of small object, or if a definite diagnosis cannot be made when a child is sick, a foreign body should always be considered, as he is too prone to put objects in his mouth.

In a child, hoarseness, croupy cough, dyspnea, wheezing respiration or any unexplained lung pathology should cause us to consider a foreign body, as well as laryngitis, bronchitis, lung abscess and diphtheria cases. Fever may or may not be present, depending upon the nature of the foreign body and the duration of its sojourn. X-ray should be a routine measure for diagnosis and the pictures should be made always in the antero-posterior and lateral planes and in intermediate planes if necessary. In X-raying for foreign body in the esophagus, pictures should be made of the entire gastro-intestinal tract. If a flat foreign body such as a coin is located in the upper chest in the coronal plane, it is assumed to be in the esophagus; if in the sagittal plane, it is assumed to be in the larynx or trachea, and the reasons for this are obvious, due to the shape of the esophagus and the larynx.

X-ray films usually show lung pathology splendidly, but sometimes they do not reveal the presence of a very thin metallic foreign body unless the Bucky diaphragm is used, and then only when the object is taken on edge. Non-radio opaque foreign bodies must be diagnosed upon the history, symptoms, physical signs and lung changes incident to the foreign body as represented by the X-ray.

When a foreign body is suspected in the esophagus and does not show on the X-ray plate, opaque meals and capsules are resorted to. The bougie has no place in diagnosing esophageal conditions, and should be regarded as a dangerous instrument for this purpose.

Treatment of foreign body in either the air or food passage is removal, through the peroral route if possible. As a rule, our adult cases are given a hypodermic of morphine and hyoscine and a topical application of cocaine to the larynx and trachea prior to removal of the foreign body. In children, if there is not too much tracheo-bronchitis, we frequently use a general anesthetic, feeling that less trauma of the larynx is produced, and hence less edema, which obviates the necessity of a subsequent tracheotomy.

We cannot emphasize too strongly that the procedure of removing an organic foreign body from the bronchus of a young child—almost overwhelmed by toxemia from the purulent tracheo-bronchitis and by physical exertion while fighting for air—presents a serious problem. To be done successfully, it requires the best judgment and skill at our command, combined with experienced team work and adequate equipment.

### Case Reports

*Case* 1.—M. L. S., age two years, admitted to Johnston-Willis Hospital, October 10, 1932, with a history of eating peanuts, when his father playfully bounced him up in his arms. He immediately choked and this was followed by marked dyspnea and severe cough. He was admitted to the hospital eight hours later and his temperature was 103.4. The child was dyspneic and very restless. The chest examination revealed coarse rales throughout the right lung with diminished breath sounds over the right upper lobe. X-ray indicated impaired aeration of the right lung and flattening of the right portion of diaphragm.

Bronchoscopy was immediately done and a portion of a roasted peanut removed from the right main bronchus, at the upper lobe branch. The child was returned to room apparently relieved; however, the following day cough and fever persisted, which we attributed to the peculiar peanut bronchitis that sometimes follows. On the fourth day, fever and restlessness were unchanged; leucocytes 12,000. Second X-ray of the chest was negative; nevertheless, it was thought advisable to pass the bronchoscope again. To our surprise another piece of peanut was found in the same bronchus. This was removed, and the scope reintroduced for exploration the third time, and to our amazement another portion of peanut was seen located in the same bronchus. After removing this we again introduced the scope to make sure there were no more portions present.

The child made a quick recovery and left the hospital on the sixth day. These pieces of peanut were large, nearly equal in size, and superimposed upon each other in the same

bronchus; hence their obscurity until the upper one was removed.

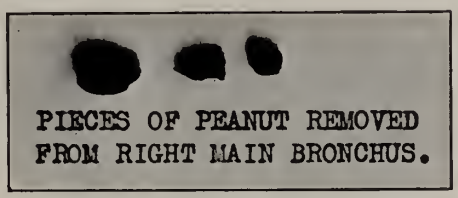


Fig. 1.

*Case* 2.—White woman, age forty-five years, seen February 18, 1929, stated, when eating oysters six days previously she was suddenly and severely seized with pain through the lower central portion of her chest. On the third day her pain was severe and she was unable to swallow any type of food. X-ray studies were made which revealed esophageal obstruction in its lower third, simulating malignancy or cardio-spasm.

The patient was admitted to the Johnston-Willis Hospital and esophagoscopy decided upon. After reaching the occluded area, persistent and gentle manipulation with the esophagoscope exposed the edge of a portion of an oyster shell. As the sojourn had been six days and the shell large, inflammatory occlusion had taken place. The shell evidently reached its destination by adhering to the side of a large oyster before being detached. The patient's temperature ranged around one hundred and two after the shell was removed.

Post-operative treatment consisted of morphine, sterile water, and bismuth for three days. The patient was discharged on the fifth day relieved.

*Comment:* Had diagnosis been deferred much longer, perforation with its inevitable results would have followed.

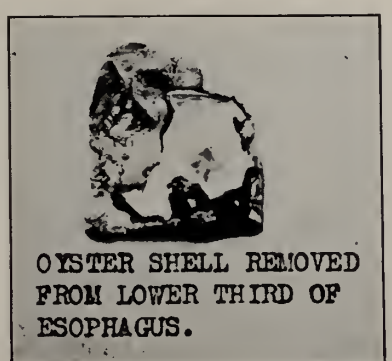


Fig. 2.

*Case* 3.—White woman, age twenty-seven years, stated that she was eating quail two days before when she was suddenly conscious of pain in the chest. The next day, swallowing was painful and difficult. X-ray films were negative. Fluoroscopy with barium mixture showed a partial esophageal obstruction in the upper third.

The patient was admitted to the Johnston-Willis Hospital; esophagoscope passed and a bone located and removed simulating a quail's rib. Recovery was uneventful.

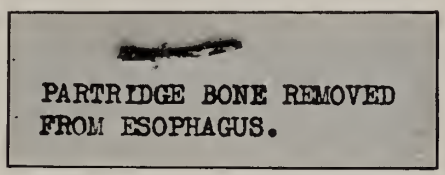


Fig. 3.

*Case* 4.—B. L. C., age thirteen months, admitted to Johnston-Willis Hospital, August 1, 1930. Mother stated baby had been crying and regurgitating milk for two days. Roentgen ray showed open safety-pin in upper third of esophagus with point upward. Delivery was accomplished under anesthesia by disengaging the point and making gentle traction.

Fig. 4.

*Case* 5.—R. E. C., age thirty-six years. Patient stated while eating chicken stew he was seized with a pain in the chest. He consulted his physician and was found negative. An X-ray was made of the chest, including a barium meal, and an obstruction was located in the lower esophagus.

Exploratory esophagoscopy was done and a bone located and removed, one and one-half inches long.

The patient left the hospital in three days entirely relieved.

*Comment:* The lower point of the bone had pierced the wall but not entirely through.

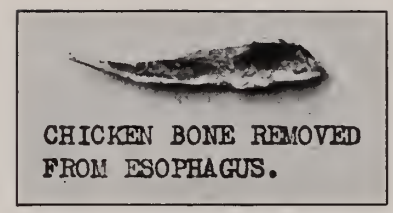


Fig. 5.

*Case* 6.—White man, aged thirty years, seen December 3, 1928. When admitted to Johnston-Willis Hospital, he stated, while eating rabbit stew the previous day he was suddenly conscious of a sticking sensation in the upper part of his chest. The next day the pain continued, and swallowing was difficult and painful. Fluoroscopic examination with barium fluid and capsules was indefinite, though the X-ray film indicated a small bone in the vertical position in the upper third of the esophagus. The patient was admitted to the hospital and esophagoscoped. A bone simulating a rabbit's rib was found, one end imbedded in the posterior esophageal wall with the proximal end free. Removal was not difficult, and the patient made a quick recovery, leaving the hospital in three days.

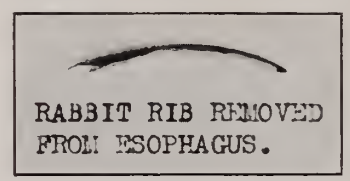


Fig. 6.

*Case* 7.—Penny from upper third of esophagus. B. H., age twenty-two months. Mother stated she noticed the day before the baby spat up his food and would cry when fed. She consulted her physician who had the esophagus X-rayed and a metallic substance was seen simulating a coin about the esophageal sphincter muscle. A small esophagoscope was inserted and a penny removed.

Fig. 7.

*Case* 8.—B. M., age two years. Bean removed from trachea after a three day sojourn. The child's parents stated the infant had a choking spell three days before being brought to the hospital. The bean had swollen so that it was impossible to deliver it through the larynx without undue trauma. Tracheotomy was performed and delivery was made by this route.

*Comment:* Had this child's condition been recognized the first day no doubt a tracheotomy would have been unnecessary.

Fig. 8.

*Case* 9.—Open safety pin from larynx. L. M. S., age one year, admitted to Johnston-Willis Hospital, May 8, 1929. The baby manifested symptoms of stridor and difficult breathing. Physical examination was negative. Roentgen ray of chest showed open safety-pin at junction of larynx and trachea. It was removed the same day and the patient left the hospital the next day, relieved.

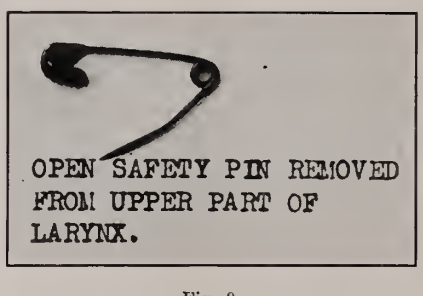


Fig. 9.

*Case* 10—Large perforated bead from right bronchus. V. F., age six years, was admitted to Johnston-Willis Hospital August 8, 1930. Mother stated child was playing with beads when she developed a sudden choking spell, violent dyspnea and cough followed. She immediately brought her to Richmond where roentgen ray films showed the object in the trachea. The bead was so large that it could not be delivered easily through the vocal cords. The child would have probably been asphyxiated had not the bead possessed a central perforation.

Tracheotomy was performed and the bronchoscope introduced through the tracheal opening and the bead delivered.

The child made an uneventful recovery.

Fig. 10.

*Case* 11.—M. N., age two years, admitted to Johnston-Willis Hospital August 14, 1930. The child's mother stated the infant was eating watermelon and suddenly choked and strangled. These symptoms gradually subsided and a wheeze developed with each inspiration. Exploratory bronchoscopy showed a seed located in the right bronchus at the junction of the lower and middle lobe bronchus.

The seed was removed with little difficulty and the child left the hospital the following day.

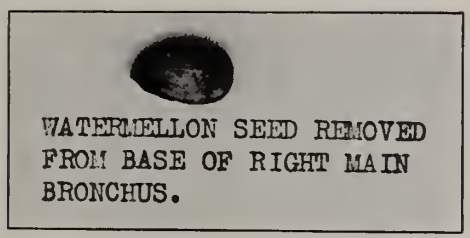


Fig. 11.

*Case* 12.—P. J., age three years, seen March 30, 1931, with a history of choking on a grain of corn. Cough and labored respiration continued. Physical examination showed diminished or nearly absent breath sounds over the left chest.

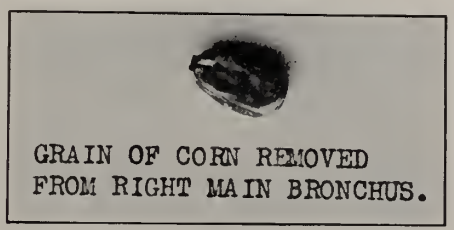


Fig. 12.

Roentgen ray showed heart and trachea pushed to the right, indicating obstructive emphysema on the left. Bronchoscopy was done and a grain of corn found in the left main bronchus; this was removed and the child made a good recovery.

*Case* 13.—White child, aged five years, admitted to Johnston-Willis Hospital September 16, 1929. Mother stated the child was feeding chickens and while doing so held grains of corn in his mouth. He was frightened by a chicken flying towards his face. He had a violent attack of choking, coughing and dyspnea which gradually subsided; cough and fever persisted and on the sixth day he was sent to the hospital.

Physical and X-ray findings were essentially negative; however, with the definite history obtained, exploratory bronchoscopy was done. A grain of corn was located in the right bronchus, and removed. The cough and fever subsided and the child was discharged on the third day relieved.

*Comment:* This case illustrates the importance of a history in spite of negative physical signs and secondary roentgen ray changes.

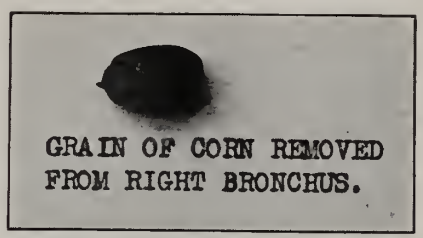


Fig. 13.

*Case* 14.—W. M. B., age three years; admitted to the Johnston-Willis Hospital September 8, 1930. August 29th the child was eating watermelon and playing with a duck. Suddenly the child developed a choking and coughing spell. This was followed by wheezing and coughing.

A physician treated the child six days; it was then sent to a clinic, examined, and returned home with a diagnosis of whooping cough. The cough and restlessness persisted, so it was taken to another city for examination. A foreign body was suspected and the child referred back to Richmond. Examination revealed rales throughout the chest, asthmatoid wheeze, cough and hoarseness. Roentgen ray films showed emphysema of left lung, suggesting expiratory obstruction in the left main bronchus. Bronchoscopy showed a watermelon seed lodged in left bronchus, which

was removed; the bronchitis and cough cleared up in a few days. The child left the hospital on the fourth day relieved.

*Comment:* This child was treated nine days by four physicians before a foreign body was suspected. A case of this nature emphasizes the importance of a careful history.

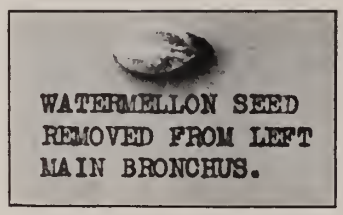


Fig. 14.

*Case* 15.—B. H., age twenty-two months, admitted to Johnston-Willis Hospital April 26, 1931, with a history of choking while having corn in his mouth the previous day.

Examination showed diminished breath sounds over entire right lung. Roentgen ray indicated obstructive emphysema of right lung. The child was restless and dyspneic.

Bronchoscopy was performed and a grain of corn was located at the right main bronchus, nearly occluding the lumen. It was removed and the child left the hospital the following day.

Fig. 15.

*Case* 16.—Metal washer removed from esophagus after a three day sojourn. A. P., age five years, seen May 25, 1929, complaining of inability to swallow. His temperature was 101 degrees and physical examination negative. Roentgen ray showed metal object in upper esophagus. Esophagoscopy was done and the washer removed. The patient was fever free in two days and discharged as relieved.

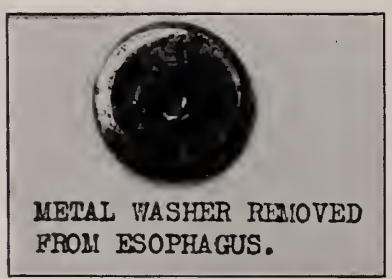


Fig. 16.

*Case* 17.—Nickel removed from upper esophagus. M. H., aged four years. The only symptom or history this child gave was inability to swallow. After two days of fasting an X-ray was taken and the diagnosis revealed. Esophagoscopy was performed and the child made an uneventful recovery.

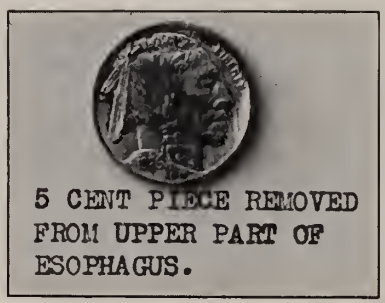


Fig. 17.

*Case* 18.—A. C., aged six years, admitted to St. Philip's Hospital February 20, 1930, with a history of difficult swallowing and regurgitation of food for five days.

X-ray films showed a metal ring in the esophagus on a level of sternoclavicular joint.

Esophagoscopy under general anesthesia showed incomplete ring imbedded by ulceration in posterior wall. Delivery was difficult without seriously lacerating esophageal wall. The child was discharged in three days relieved.

Fig. 18.

*Case* 19.—Wrist band clasp removed from laryngo-tracheal region after a three day sojourn. M. C., aged three years. Parents stated child had been having choking and rattling of mucus in throat for three days. Family physician suspected diphtheria; how-

ever, as no improvement occurred after antitoxin administration, and with the negative culture report, foreign body was suspected and the patient was sent to Richmond. The child was admitted to the Johnston-Willis Hospital and the diagnosis confirmed by the roentgen ray.

After bronchoscopic removal, the child left the hospital the following day relieved.

Fig. 19.

*Case* 20.—February 22, 1933, W. M. C., Jr., age six years, swallowed a button one inch in diameter. On admission to St Luke's Hospital, X-ray showed only a very faint shadow opposite the second dorsal vertebra. The object was swallowed seven hours before seen by us. No attempt had been made to swallow food. The button was found at the first esophageal constriction and removed with speculum and straight forceps.

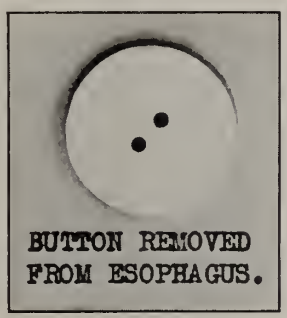


Fig. 20.

*Case* 21.—June 2, 1930, B. C., age three years, swallowed a straight needle, and was admitted to St. Luke's Hospital. X-ray showed it in upper portion of esophagus. Under ether anesthesia, a straight needle two inches long was located with the speculum in the upper portion of the esophagus, each end being imbedded in the mucosa. After freeing the upper end with the forceps, it was removed.

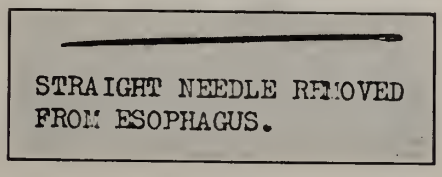


Fig. 21.

*Case* 22.—June 5, 1930, M. J., age one year, while playing on the floor with uncooked popcorn, put a grain in her mouth. Her mother tried to get it out, during which procedure the child strangled and coughed. Then she developed a wheezing respiration, croupy cough and dyspnea.

On admission to St. Luke's Hospital the temperature was 98.8 degree F. X-ray showed evidence of a non-opaque foreign body in the right main bronchus. The breath sounds on the right side were diminished. The heart was not displaced.

The popcorn was located in the right main bronchus, but some difficulty was experienced in grasping it. Following the removal, dyspnea was marked and the temperature elevated for several days, going as high as 104 degrees F. rectal. Although the course was stormy, the patient recovered without tracheotomy or other complication, and, five days after bronchoscopy, was discharged from the hospital. No anesthetic was used.

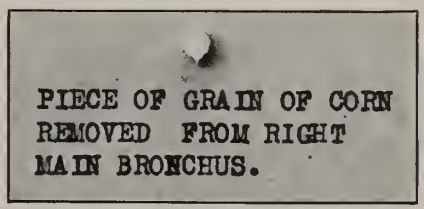


Fig. 22.

*Case* 23.—Mrs. Von H., while eating guinea fowl March 15, 1930, swallowed a piece of bone. The bone produced considerable discomfort and a definite sticking sensation in the lower part of the throat. She could swallow only liquids.

Under ether anesthesia, the bone was lo

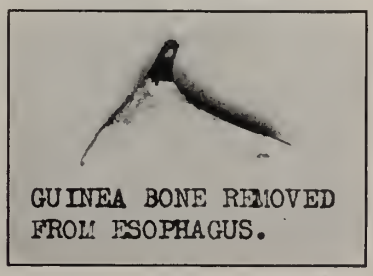


Fig. 23.

cated and removed from upper third of the esophagus after first removing particles of food which obscured the foreign body. The patient went home the following day.

*Case* 24.—B. S., a five-year-old negro boy, was blowing a whistle. A thin metallic band inside the whistle came loose and was sucked into the larynx. X-ray showed the metallic object to be in the right main bronchus.

The object had been in the lung one day. There was slight cough. Temperature was normal.

The bronchoscope was inserted and the foreign body removed from the right main bronchus. Only a slight amount of secretion was found in the bronchial tubes. Neither local nor general anesthesia was used. Patient had an uneventful recovery and was discharged from St. Philip's Hospital the following day.

Fig. 24.

*Case* 25.—W. S., white boy, three years old, swallowed a button. When admitted to Memorial Hospital, the child was unable to swallow solid food. X-ray showed shadow of a round object in upper part of the esophagus. Under ether anesthesia and with the aid of the esophageal speculum and grasping forceps, a button was removed from the esophagus at the crico-pharyngeal constriction. No complication.

Fig. 25.

*Case* 26.—C. P., a four year old child, swallowed an open safety-pin and was admitted to Dooley Hospital. X-ray located the pin in the larynx with the keeper up. With the laryngoscope, the pin was removed. No anesthetic was used and no complication followed removal.

Fig. 26.

*Case* 27.—December 19, 1931. S. B., age three months, was fed a peanut by his little sister about six hours before admission to Johnston-Willis Hospital. He choked and coughed violently; developed signs of bronchial irritation and became cyanotic several times. Physical examination showed the child slightly cyanotic, uncomfortable and anxious, temperature 99.2 degrees F.

X-ray report: "Heart and mediastinal shadows are displaced to the right side. The outer and lower one-third of the lung shows lack of aeration. The left lung shows an emphysema.

"Conclusions: The changes are indirectly suggestive of a non-opaque foreign body in the right main bronchus."

Under ether anesthesia, a piece of peanut was removed from the right main bronchus without special difficulty about 2 P. M. At 6 P. M., the rectal temperature was 103.4 degrees F., and, although there was some dyspnea, it was not marked. However, by 11 P. M. the respiration had become so labored that a tracheotomy was performed with marked relief to respiration. The following day at 8 A. M., the temperature was 107 degrees F. A diagnosis of pneumonia was made and appropriate treatment instituted. The patient died the second night following operation.

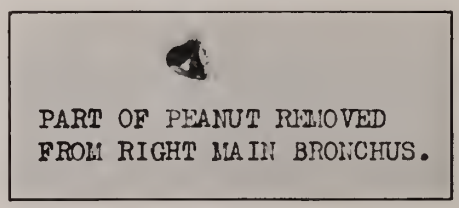


Fig. 27.

*Autopsy Findings:* "Both lungs contained large areas of consolidation. The upper right lobe was almost completely consolidated. The bronchi were explored for remaining pieces of peanut, but nothing was found. The thymus was large, weighing 22 grams."

*Case* 28.—M. M., adult woman, laughed while holding an open safety-pin in her mouth. The pin, with the point up, was located with fluoroscope and X-ray in the esophagus at the diaphragmatic constriction. The patient was admitted to Johnston-Willis Hospital. With local anesthesia, the esophagoscope and forceps, the pin was removed several hours after being swallowed, May 9, 1932. No complications ensued.

Fig. 28.

*Case* 29.—C. W., age two years, swallowed a five-cent-piece September 22, 1931, one week prior to admission to Johnston-Willis Hospital, and developed difficulty in swallowing. Vomited once. No fever or cough. X-ray showed the nickel in the upper portion of the esophagus. It was removed with the esophageal speculum and grasping forceps without the use of an anesthetic.

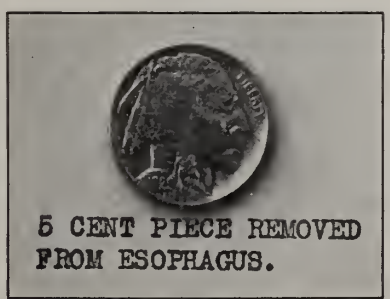


Fig. 29.

*Case* 30.—B. F. W., age two and one-half years, on November 9, 1932, swallowed a tiddle-de-wink on which she choked. After swallowing the foreign body, the patient could swallow liquids, but regurgitated solid food. On admission to St. Luke's Hospital, two days following accident, temperature was 100.6 degrees F. No cough present. X-ray, after barium, showed only a suspicious shadow in upper part of esophagus.

Under ether anesthesia, a tiddle-de-wink three-fourths inch in diameter was removed from the esophagus at the crico-pharyngeal constriction. After reaction from ether, fever soon disappeared and patient swallowed normally.

Fig. 30.

*Case* 31.—October 30, 1932, M. L. D., female, sixteen months, was fed salted peanuts by her little sister. She strangled and began coughing and wheezing, subsequently developing shortness of breath. She continued to play and did not appear sick, and was not seen by a physician until five days after the accident. He sent her immediately to St. Luke's Hospital. On admission, rectal temperature was 100 degrees F. Patient coughed and wheezed on exertion. When quiet, respiration was not labored.

X-ray showed an emphysema of the right lung, with the mediastinal structures displaced to the left, more marked on expiration than on inspiration, and the diaphragm constantly depressed on the right. Patient was given morphine, grains 1/24, and atropine, grains 1/450. A No. 4x30 bronchoscope was used and a piece of peanut found in the right main bronchus. It was readily grasped with the side-curved forceps and removed.

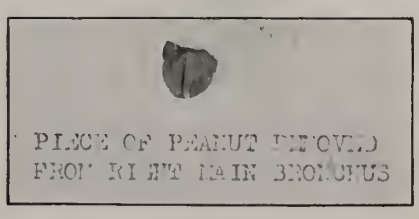


Fig. 31.

The point of interest about this case is that there was practically no tracheo-bronchitis nor exudate produced by a cooked peanut in the bronchus of a child sixteen months old over a period of five days. Wheezing stopped immediately after removal of foreign body and there was no dyspnea following. Patient was discharged from hospital the next day. Chest was clear and rectal temperature 100 degrees F.

*Case* 32.—M. D., white girl, age nine years, swallowed a safety-pin four weeks before consulting us on May 29, 1933. After the initial symptoms of gagging and coughing, no other symptoms developed for two weeks, when the patient became hoarse and coughed occasionally. With the laryngeal mirror, the keeper of the pin could be seen in the lower part of the larynx but the point was concealed. The larynx was very red.

X-ray showed the pin in the lower part of the larynx. The patient was admitted to Johnston-Willis Hospital. The pin was removed from the larynx, but, unfortunately, was dropped in the pharynx and swallowed before it could be recovered. Immediate examination with the fluoroscope showed the pin in the stomach. It was recovered in forty-eight hours in the second stool.

Fig. 32.

*Case* 33.—C. M., colored female, age four years, was admitted to St. Philip's Hospital, August 21, 1933.

Her mother said she had swallowed a jack rock. Fluoroscope revealed an object in the upper part of the esophagus.

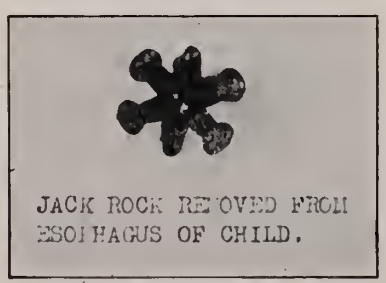


Fig. 33.

The jack rock was exposed with the esophageal speculum and removed without difficulty, three and one-half hours after being swallowed.

*Case* 34.—Mrs. C. R. V., adult, white woman. While eating rabbit, December 4, 1932, a bone hung in her throat. Examination with the laryngeal mirror showed a bone about two inches long lodged in the larynx.

The patient was admitted to Johnston-Willis Hospital where the foreign body was removed with the laryngoscope and straight forceps.

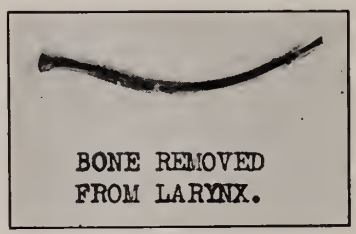


Fig. 34.

*Case* 35.—B. C., age six months, admitted to Memorial Hospital March 19, 1926, complaining of inability to swallow for two days. X-ray showed esophageal obstruction with barium meal in the upper third. Esophagoscopy was performed and a portion of a chicken's neck was found impacted and removed. The child had no further difficulty in swallowing and left the hospital two days later.

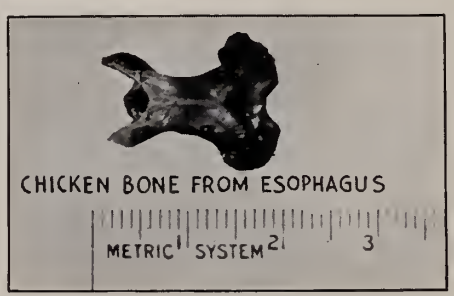


Fig. 35.

*Case* 36.—J. W., age fifteen months, admitted to the Johnston-Willis Hospital, August 20, 1931, with a history of inability to swallow without great difficulty for four days. The chest was clinically negative. An X-ray examination showed a metallic mass in the upper third of the esophagus, lying in the coronal plane.

Esophagoscopy was done under general anesthesia and a metal object located and removed. There was ulceration and edema present from the four days' sojourn.

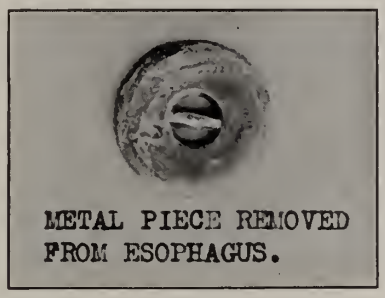


Fig. 36.

*Case* 37.—Mr. J. C., age fifty years, was eating chicken stew August 22, 1932, when he was suddenly conscious of a pain in his upper chest. Subsequent swallowing was difficult and painful. He consulted his family physician who suspected a foreign body and referred him for examination.

. It was evident a foreign body was present, and this was confirmed by X-ray films and barium meal.

He was admitted to Johnston-Willis Hospital and esophagoscopy located a bone lodged against the esophageal wall in its upper third. The bone was removed with little difficulty and the patient discharged the third day.

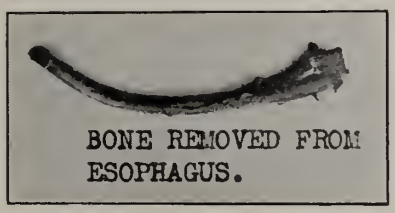


Fig. 37.

*Case* 38.—C. A., child, age two years, refused to eat. She was thought to have sore throat and was put to bed. The child began to suffer pain, so the family physician was called. He suspected a foreign body and referred the patient to the Johnston-Willis Hospital. X-ray showed an open safety-pin in the esophagus on a level with the sterno-clavicular joint. An esophageal speculum was introduced and the pin removed.

Fig. 38.

*Case* 39.—Colored man, age forty years, admitted to the Retreat for the Sick Hospital. He stated he had been unable to swallow solids or liquids for three days. X-ray films indicated an obstruction about the middle third of the esophagus.

Esophagoscopy was performed and, after recovering a bolus of meat, the esophageal wall appeared thickened and constricted. The patient stated later he swallowed lye when he was a child. Evidently the partial stricture was due to this caustic.

Fig. 39.

*Case* 40.—D. C., aged five years, admitted to Johnston-Willis Hospital May 5, 1926, complaining of pain and difficulty in swallowing for twenty-four hours.

X-ray films revealed a metallic mass simulating a coin in the upper portion of the esophagus.

Esophagoscopy was performed and a five-

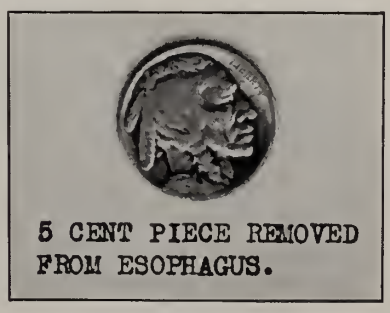


Fig. 40.

cent-piece removed. The patient left the hospital the following day relieved.

*Case* 41.—White boy, aged three years, admitted to Johnston-Willis Hospital with a history of regurgitation of food for three days. X-ray examination was negative. Exploratory esophagoscopy revealed a button in the esophagus on the level with the sterno-clavicular junction. It was removed with the esophageal speculum, and the child discharged the following day relieved.

Fig. 41.

## FEVER THERAPY IN PARESIS.*

JAMES KING, M. D., Radford, Va.

The treatment of paresis by the production of fever and the results which have been obtained creates one of the most dramatic advances in medical progress. One cannot fully appreciate the real meaning of this somewhat radical form of treatment without having seen many cases of general paralysis of the insane in the days when the disease missed a 100 per cent mortality by a fraction. Drs. Church and Peterson, in their Manual of Nervous and Mental Diseases published in 1915, state:

"The prognosis is practically always death within a short term of years. The author has never known personally of a case recovering. In our whole literature there are but a dozen cases of recovery on record. It is probably questionable if even these were genuine cases of paresis, since an error in diagnosis is not at all uncommon."[1]

Within the brief expanse of fifteen years our attitude towards dementia paralytica has witnessed a change from utter despair to hopeful expectancy.

Von Jauregg, in 1887, first proposed the treatment of paresis by the malarial or fever method. Perhaps he reasoned, as we do today, that fever is a beneficial measure of the body against invading organisms. Practically everyone of the self-limiting pathological conditions is accompanied by a rise in temperature. This temperature may be either the cause of the process of cure or it may be merely an accompaniment of the process. It is worthy of note that certain classes of pathological conditions which are ordinarily not self-limiting are not accompanied by a rise in temperature except in their terminal stages.[2]

Von Jauregg thought, however, that malaria was too severe in itself for the average paretic, and until 1917 he tried the production of fever by the injection of toxins. As the latter failed to produce the desired results, Jauregg went back to his original idea of inoculating the paretic with tertian malaria.

But the idea was not entirely new. Hippocrates, Galen, Sydenham and others noted that diseases such as ague (malaria), typhus and typhoid fever would influence the course of the psychosis, thus again proving that there is nothing new under the sun.

In the summer of 1917 Von Jauregg inoculated nine cases of paresis with tertian malaria. One patient died, two were reported unchanged, three had incomplete remissions, and three had remissions, all of which were complete and had persisted up to the time of his last publication, eight and one-half years later. Other cases were treated and gave like results. Soon the reports of Von Jauregg were confirmed all over the world; from the Vienna clinic, from Hamburg, England, Denmark. In 1924, the first report was made in the United States by Lewis, of the St. Elizabeth's Hospital. And from then the number of cases treated have multiplied by the thousands.

For many reasons it is difficult to give statistical presentation of the results which have been obtained by malaria. Favorable reaction depends largely upon the degree to which the syphilitic process has advanced. A recent report in the *J. A. M. A.* by O'Leary and Welch[3] show that in 186 cases of advanced dementia paralytica, excellent results were obtained in 35 per cent and fair results in another 35 per cent. They report 249 cases of "early paresis," with excellent results obtained in 46 per cent of the cases and fair results in 35 per cent.

The average mortality during malarial treatment varies from 5 to 10 per cent.[4] This rather high death rate would not in itself be unfavorable to the continued use of malaria in view of the statistics of 1915, but there are many

*Read before the Southwestern Virginia Medical Society, at Wytheville, Va., September 15, 1933.

other objections. Malaria is a debilitating disease. The blood cells and blood pressure are markedly lowered. The patient loses weight rapidly and often there is great risk. The organism is not always available. The patient has to be hospitalized. Ten per cent of paretics have an immunity to malaria. The disease cannot always be terminated when desired. One is not always sure that the proper strain is being injected. There is no means of controlling the number of chills or the height to which the fever arises. To overcome these objections, other methods of fever production began to appear.

Fever may be produced in man by external heat, such as the hot bath, electric blanket or electric light cabinet; or by penetrating heating agents, as diathermy and the radiotherm. Of the devices thus far brought into use, diathermy has been the more satisfactory.

Successful treatment with diathermy depends on certain mechanical factors necessary to produce elevation of temperature, maintain it, and prevent burns to the patient. The prime requisites are properly constructed electrodes, a machine powerful enough to give sufficient energy, and proper insulation of the patient.

The electrodes, as here demonstrated, are large and the edges fenestrated, since the current has a tendency to concentrate along the edges. The entire back is covered by one electrode and the entire chest and abdomen by the other. The amount of current necessary varies with the thickness of the individual. Usually 3,500 to 4,000 m.a. is sufficient.

The patient is stripped, the electrodes applied to the front and back, and held tightly in place by the use of a laced jacket. Two rubber sheets and five blankets are then wrapped about the patient. The hands and feet are secured to prevent interruption of the treatment when delirium ensues. A heavy zipper bag encloses the patient entirely, except the head which protrudes through the aperture.

The current is then turned on and the milliamperes steadily advanced until within thirty minutes the first maximum is reached. Usually the temperature regulating mechanism has been broken down by this time and there will be noted a rise of perhaps one degree. The heart increases in rate, together with the respiration. Temperature, pulse and respiration are taken and recorded every fifteen minutes.

The fever curve to be desired is that of a long sustained temperature with a high plateau ranging above 103.5 degrees for eight hours.

It has been experimentally shown that temperatures of 105.8 degrees are definitely spirocheticidal. Organisms living in tissues are killed outright by this amount of heat in two hours. In producing our fever, therefore, we seek to maintain the temperature above 105.8 degrees for four hours of the eight hour period.

The current is usually turned off after the fever reaches 104 degrees. The temperature will continue to rise to 106 degrees or over. When 107 degrees is reached, the bag is loosened and the temperature allowed to fall to 106 degrees. The bag may then be closed, if desired, and the temperature will rise again. This controllable feature constitutes the greatest advantage of artificial fevers over that induced by malaria.

Temperature ranges from 107 degrees and over may seem rather dangerous to some of you. Some workers with diathermy are using temperatures of 107 degrees and 108 degrees sustained over several hours. Some state that they have maintained a temperature of 108.5 degrees in robust individuals for four hours. Such artificially induced fevers are tolerated well by the patient for the reason that the temperature is not the same process as that noted in fevers accompanying pathological conditions.

During the course of the treatment, the patient sweats profusely and complains of the sensation of warmth. Water is given in large quantities to replace that lost through sweating. A hypodermic of morphine is administered after the temperature reaches 104 degrees. Restlessness subsides and the patient often falls to sleep.

Neymann, who has done most of the pioneer work with diathermy in paresis, recommends a minimum of twenty treatments. He finds that most remissions occur after the fifteenth treatment. A case is not abandoned until fifty treatments have been administered. The treatments may be given at intervals of two or three days.

Practically the only danger in using diathermy lies in the production of burns. It is important to see that the electrodes fit snugly to the body and that any severe complaint is investigated. Since the introduction of improved electrodes, this obstacle has been largely removed.

There are few contra-indications. Aged, de-

bilitated, cardio-vascular and renal cases should be closely watched during the treatment. These conditions are distinct contra-indications to any other form of fever therapy, since the height of the fever cannot be controlled. *Perfect control is the great advantage of diathermy over other methods.*

Four hundred and forty-six cases of paresis have been reported in the literature as treated by diathermy. Summarizing all of these, 133, or 30 per cent, have been reported in an absolute state of remission; 153, or 35 per cent, have recovered sufficiently to be discharged from hospitals. These results, as you see, are practically identical with those obtained by the malarial method. As more knowledge is gained in the use of the diathermy, it is not at all unlikely that the method will show more favorable results than with malaria.[5]

We have used practically all forms of fever at Saint Albans with not sufficient cases to report by percentages. At the present time, after establishing the diagnosis by the clinical picture, blood and spinal Wassermanns and the colloidal gold test, we institute a regime as follows:

The patient is first given a short course of neoarsphenamine, if no arsenicals have been given. This is intended to improve any systemic syphilitic process that may exist. Formerly, we gave tryparsamide, grams 2.0, weekly for ten weeks, but at the present time we proceed immediately to the production of fever. The hazards of malaria previously made this the last part of the treatment, but the comparative safety of diathermy has led us to institute this form of therapy without delay.

Following a series of fever therapy, it is advisable to give a course of some arsenical. Tryparsamide is the drug of choice and the production of optic nerve changes has not been noted in our treatment of these cases. Bismuth is a very valuable drug in the after-treatment. The iodides and mercury by mouth are to be recommended after the courses of tryparsamide and bismuth. Intensive treatment for a period of not less than two years insures the patient of a more favorable prognosis. But drugs alone will not greatly alter the course of paresis. The one great hope, to my mind, lies in elevation of the body temperature, and the method of choice, for the present at least, is by diathermy.

The following cases are presented:

*Case No. I.*—Mr. S. S. This patient, age 35, was first seen on March 2, 1932. His wife stated that he had been forgetful for the past several months. He gradually became weak and finally had to give up his work. Formerly he was of a jolly nature, but now he appeared to always be brooding. Examination by his physician disclosed a strongly positive blood and spinal fluid Wassermann. He had been treated for three weeks prior to admission. During his sleep the patient became quite disturbed, frequently passing into excited episodes. Examination revealed an obvious mental disturbance. The expression was one of anxiety, while the insight and judgment were defective. Deterioration was of a moderate degree. The patient had Argyll-Robertson pupils, and all reflexes were exaggerated. Blood and spinal fluids were both positive with a typical paretic gold curve. The diagnosis was paresis, depressive type. R. B. C. and W. B. C. were within the limits of normal. The urine was essentially negative. The patient was placed on neoarsphenamine for a total of four doses. This was followed by twelve injections, 2.0 grams weekly, of tryparsamide. No improvement could be noted in the patient's mental condition, although the excited attacks had ceased.

Ten injections of typhoid vaccine were then given. A maximum rise of 103.5 degrees was obtained.

Following this, malarial blood was injected but there was no take. Later a new strain was obtained and the patient developed the fever. He passed through fourteen chills, the temperature rising to 106.0 as a maximum, with an average rise of 104.5 degrees. The chills ceased automatically at the end of the fourteenth paroxysm.

Five months elapsed and the patient's mental condition continued uninterruptedly. He had developed a strong suicidal tendency and made several attempts to jump from a height.

For about three weeks following the malaria he was quite lucid and continued so until a lumbar puncture was done for diagnostic purposes. This was no doubt a coincidence, but he relapsed into his former mental state.

The patient was then treated vigorously with tryparsamide and iodo-bismitol for several months. He gained in weight and his mental health was noticeably improving. He returned to his home on October 26, 1932, and has now made a complete recovery.

It is interesting to note in this case that the

spinal fluid and blood Wassermann became negative long before the clinical improvement occurred. Sixty-five per cent of those cases reported as in complete remission still have a positive serology. But these cases have been followed over a sufficient period of years to indicate that the remission is permanent and that the blood and spinal fluid do not improve concomitantly. (Case presented.)

*Case No. II.*—Mr. H. L., age 28, single. This patient was admitted to Saint Albans Sanatorium, January 31, 1932. The history was that he had been nervous for the preceding six months. He had lost interest in his work, as is frequently the case in early paresis. History of syphilis contracted three years ago.

Physically, he is in good condition. The typical neurological signs were not observed: there was no fixation of the pupils, nor was there any other cranial nerve involvement. The patellar reflexes were somewhat exaggerated The mental picture was that of continued well-being. Everything pleased the patient, and he was extremely cooperative. There was a lack of insight and judgment. No delusions. He offered no complaints and a diagnosis would have been difficult without the laboratory findings of a strongly positive blood and spinal fluid Wassermann. The colloidal gold curve was typically paretic. The diagnosis was paresis, type not well defined.

The patient was at first placed on mercury and iodides with bismuth intramuscularly. This was followed by 2.0 grams of tryparsamide, intravenously, for four weeks. Malarial blood was secured and the patient given 2 c.c., but there was no take. After waiting two weeks for the malaria to develop, typhoid vaccine, mixed, was used intravenously. Twelve chills were produced, with an average maximum of 103 degrees. Following this nonspecific therapy, the patient received bismuth in the muscle, twice weekly, for five weeks. He was discharged and received neoarsphenamine for several months. On April 24, 1933, ten months later, the patient was readmitted and artificial fever produced by diathermy. In this case the temperature was sustained over 103.5 degrees for forty-four hours during the ten treatments, and above 105.8 degrees for thirteen and one-half hours. The amount of treatment which this patient received is insufficient, but he is being observed each month and receiving vigorous antileutic treatment at the present. His mental condition has improved, but his blood and spinal fluids remain strongly positive. We cannot say that he is in complete remission. Results from hyperpyrexia cannot be evaluated under six months but we can say that his paresis is arrested at the present time.

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*St. Albans Sanatorium.*

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## DOES CIRCUMCISION IN INFANCY PROTECT AGAINST DISEASE?

ABR. L. WOLBARST, M. D., New York City.

Any human practice, like circumcision, which has survived for many thousands of years and still presents indubitable evidence of an increasing popularity, must have something more than a ritualistic or racial basis to account for its survival and popularity. We of the present day are not concerned with the origin of circumcision, which dates back long before recorded history began, nor with its mystic significance to the millions of human beings who have practiced it, both in barbarism and in civilization; but we are concerned with the remarkable fact that circumcision of male infants is being practiced on an ever-increasing scale, not as a religious rite, but solely as a recognized hygienic measure and as a preventive against serious disease in adult life.

As these beneficent results are questioned from time to time, it is the purpose of this contribution to indicate briefly the various aspects of infantile circumcision considered as an aid to personal cleanliness and the prevention of disease. The interested reader is respectfully referred to previous contributions on the subject in which it has been dealt with at greater length.[1]

1. *Circumcision Is A Great Aid to Personal Cleanliness.*—Anyone who has had occasion to work in a male genito-urinary clinic can offer personal testimony to the effect that the preputial cavity is not generally kept clean. This cavity is a blind sac, the walls and floor

of which constantly secrete smegma, which Dorland defines as a "thick, cheesy, ill-smelling secretion found under the prepuce and around the labia minora." Unless the cavity is thoroughly cleansed several times daily, this and other secretions accumulate, with results that are disgusting to sensitive olfactories. Very few uncircumcised men pay even casual attention to the hygiene of the prepuce, and this is true even of men who are familiar with soap and water. Moreover, a certain degree of balanitis is present in practically all uncircumcised men and in the unclean in particular. Many men go through life without ever taking the trouble to retract the foreskin and cleanse it; adhesions thus form, the urine gathers and decomposes in the rich, fetid soil offered by the ever-present secretions. Balanoposthitis is a common result, but it cannot occur in the circumcised. As Keyes[2] says, "although Hebrews are predisposed to diabetes, circumcision saves them from this complication."

2. *Circumcision Obviously Is A Prophylactic Against Phimosis and Paraphimosis and Their Sequelae.*—This seems to be a superfluous statement, but those who oppose routine circumcision do not seem to recognize the fact. They are quite agreed that phimosis is the cause of much trouble and disease in later life, but they prefer to take the chance, and, if anything happens, they are strong for circumcision after the damage has been done. If the ideal toward which we are working is preventive medicine, it would seem that this is a splendid opportunity for the concrete expression of that ideal.

The list of pathologic conditions for which the long, tight foreskin is held responsible, is a long one, too long to be considered here in detail. Early circumcision prevents all of them, because they cannot occur in the absence of a prepuce. Tourneux,[3] discussing congenital phimosis, lists all the many conditions that may arise, and while he does not advocate early circumcision, he concedes that the procedure is a measure of "great hygienic value." Authorities are agreed that phimosis in the elderly is potentially cancerous; in the young, it predisposes to masturbation and other reflex manifestations.

It may be added, as an important historical fact, which has changed the character of world history, that the phimosis of Louis XVI of France, and his consequent impotence which was relieved by operation, only seven years after his marriage, is held to be largely responsible for the events which led to the Revolution and the execution of the King and his Queen, Marie Antoinette.

Paraphimosis, also, cannot exist after circumcision. Schenck,[4] speaking of operative measures for the immediate relief of this condition, says that "after the lesions have healed, an acceptable circumcision can be done under local anesthesia by amputating the flaps at their bases." Which sounds very much like locking the barn-door after the cow has been stolen. And very recently, Carver[51] reported a case of paraphimosis in a man sixty-seven years old, accompanied by gangrene and retention of urine. The man was almost moribund. Amputation was performed, but death occurred the following day.

The preputial cavity may be the nidus for the accumulation of stones. Zuckerkandl[5] reported thirty cases of preputial calculus, and Velpeau (quoted by him) found a stone in the preputial cavity which weighed 130 gm. Lewin found from thirty-eight to seventy stones in eight cases, Lloyd found eleven, Corney found twenty-two, and Vincent found 200 small stones in one case.[5] Lefevre[6] extracted by means of circumcision a calculus the size of an egg from the preputial cavity of a man aged fifty-six. The phimosis was congenital. Although the penis itself was about normal in size, the glans was no larger than that of a six year old boy. (It may be interpolated here that I have seen innumerable cases of full grown men and youths with phimosis in whom the glans was extraordinarily small, but as soon as the circumcision was done and the prepuce removed, the glans very quickly took on a sudden development and attained normal size). Some years ago, a youth of seventeen was brought to me because of persistent, uncontrollable masturbation. He was said to be a "nervous case." The boy insisted there was a constant sense of irritation in the penis which he could relieve only by manual manipulation. Not one of the several physicians who were consulted took the trouble to examine the penis, but they were quite agreed that the boy ought to be sent to some institution for the mentally diseased. My examination revealed a tight unretractible foreskin with hard masses like marbles in the preputial cavity. Circumcision disclosed seventeen small stones and a severe balanitis. The boy made an im-

mediate recovery and was thus spared the experience of an institutional commitment.

3. *Circumcision Protects Against Syphilis and Chancroid.*—Circumcision does not protect against gonorrhea, but it does protect against syphilis and chancroid. The reasons are obvious. Long ago[5] Hutchinson, Fournier, Clerc and others pointed out that the foreskin is the favorite site for about 75 per cent of primary chancres. In 1854, Hutchinson[7] observed that among out-patients in the Jews' quarter in London, the occurrence of syphilis was in the proportion of one Jew to forty-five non-Jews. In a study of 1,500 venereal cases,[8] I found that of 750 circumcised men (taken alphabetically from my office records), 73 per cent sought treatment for gonorrhea and 27 per cent for syphilis or chancroid; whereas of the same number of uncircumcised men, 56 per cent had gonorrhea and 44 per cent had syphilis or chancroid. These data *per se* may not prove anything, but they are supported by the views of practically all urologists and venereologists. In a previous contribution[9] I quoted at length the views of leading American authorities, and they were practically unanimous in the opinion that syphilis and chancroid are much more common in the uncircumcised. In more than 1,000 cases of chancroid, D. P. Ray has not observed a single case in a Jew.[52]

To these views may be added the statement of Vedder[10]: "On theoretical grounds there seems to be sufficient reason to recommend circumcision as a preventive of syphilitic infection, and the available statistics indicate that when circumcision is generally practiced, this procedure does actually effect a reduction in the incidence of syphilis." And in the latest edition of Keyes' classic work, he says[11]: "Circumcision in infancy will leave the patient less subject to venereal disease and sexual irritability in later years and guarantee him against epithelioma of the penis. The operation has of late years attained great popularity." The presence of a foreskin unquestionably offers a fertile field for the implantation and growth of venereal and non-venereal ulcers of every kind. These and even more serious lesions (cancer) often remain undiscovered for long periods, hidden in a mass of foul and necrotic material.[12]

4. *Circumcision Is A Prophylactic Against Cancer.*—There is indisputable evidence that the balanic secretions retained in the preputial cavity favor the development of warts and cancer. It must be obvious in the light of our knowledge of cancer, that the constant friction and irritation occasioned by the presence of a foreskin, even though it can be retracted, can and does act as an exciting cause. This is especially true among the unclean and hygienically careless. Owing to limitation of space, it is impossible to present all the available evidence bearing on this subject.* I shall mention but a few data with references to additional material. In 1814, Hey, in England, and Roux, in France,[13] called attention to the intimate relationship between penis cancer and phimosis. Since then, many writers on cancer have emphasized this connection and its bearing on circumcision. Barney[14] reported 100 cases of penis cancer; Barringer and Dean[15] thirty-six cases; Dean[16] seventy-five cases; Schreiner[17] sixty cases; Shivers[18] sixty-two cases; Howze[19] seventeen cases; Sutherland[20] seventy-two cases, and Megaw[21] sixty-two cases—all in uncircumcised men.

The fact that penis cancer has never been known to occur in a circumcised Jew, has been repeatedly stated by Da Costa,[22] Chetwood,[23] Waring.[24] Watson and Cunningham,[25] Lowsley and Kirwin,[26] Sir John Thomson Walker,[27] Eisendrath and Rolnick.[28] Legueu and Michon,[29] Morton[30] and K. M. Walker.[31]

In a recent article in *The Lancet*,[12] London, I published a total of 2,484 cases of penis cancer, of which 1,103 were reported by American hospitals for a five year period—all in uncircumcised men. Twelve hundred additional cases were reported from British India, 1,169 in uncircumcised Hindus and but twenty-four in Mohammedans, who ritually circumcise their boys. The striking occurrence of but 2 per cent of cancer in Mohammedans is still further accentuated by the fact that the average Mohammedan population in the hospitals reporting was 21.19 per cent of the total.

It may be asked why penis cancer develops in Mohammedans to the extent of 2 per cent and not at all in Jews, despite the fact that both groups practice ritual circumcision. The answer is simple: First, because Mohammedans perform the rite in the tenth year or later, whereas Jews circumcise on the eighth day of life; secondly, Mohammedans, according to Mantegazza[32] "cut only a very small part off, so that in a full grown man it is difficult to tell immediately whether he is circumcised

*See articles on cancer in The Lancet, January 16, 1932, and in Cancer, July, 1926, in which the subject is dealt with at length.

or not." It is therefore evidence that the Mohammedan circumcision is partial and not complete, as is the case in the Jewish circumcision. Furthermore, even if the Mohammedan circumcision were complete, cancer would nevertheless develop because of the fact that between birth and circumcision, a period of ten years or more, the irritating factors in the preputial cavity may be sufficient so to modify the character of the tissues as to constitute the necessary precancerous foundation for the later development of cancer—a condition which does not and cannot obtain in Jewish children circumcised in early infancy. This explanation is supported by actual cases of cancer on the inner surface of the prepuce in boys and young men with congenital phimosis reported by Stein,[33] Dormanns,[34] and Chavannaz and Magendie.[35]

The occurrence of cancer in men already circumcised is also thus explained; in all of these cases it will be found that the men were circumcised long after birth, usually for some abnormal condition which *per se* may have afforded the precancerous foundation an opportunity to develop before the circumcision was performed. Many such cases have been reported, but the literature has yet to show a single case of authenticated cancer in a man who was circumcised in early infancy. That is the crucial test.

I did report one case[12] of cancer in a Jew, but he was uncircumcised; this would indicate, if it does not prove, that the recognized immunity of Jews against penis cancer is not racial in character, as some would have us believe, but is due entirely to the absence of the foreskin from the earliest days of life. In other words, it may be accepted as axiomatic that where there is no foreskin there will probably be no cancer. This statement is supported by indisputable facts. It is, furthermore, supported by the editorial comment in *The Lancet*[12] which says that the facts presented establish "beyond doubt" that those circumcised early in life enjoy complete freedom from penis cancer and that this freedom is due to the greater cleanliness made possible by circumcision.

Those who oppose routine circumcision stress the point that the prepuce generally can be retracted and thus kept clean and free from pathologic consequences, and that circumcision is therefore unnecessary except in unretractable cases. But the irresistible logic of facts teaches us that penis cancer does develop in the presence of a retractable foreskin. Young,[36] Lewis[37] and others have reported cancer in cases with a retractable foreskin, in which the precancerous lesions in the preputial cavity were noted and recorded. In many of these cases, leukoplakia precedes the cancer. Rosenblum[38] reported cases of leukoplakia of the glans with partial phimosis. He quotes Fukai, of Japan, as reporting six cases of leukoplakia involving the glans and prepuce. Benedek[39] reported three cases of phimosis with leukokeratosis, with the observation that he had never observed this condition in circumcised individuals.

It may be added that penis cancer constitutes between 2 and 3 per cent of all cancer in males in this country, and from 10 to 15 per cent in the Orient and Far East. At least 225 deaths occur annually in the United States from penis cancer, according to the U. S. Census Reports, all of which probably can be prevented by early circumcision of all males.

5. *Circumcision Is A Prophylactic Against Masturbation, Convulsions and Other Reflex Irritative Phenomena.*—It may be countered at once that the circumcised also masturbate, have convulsions and so forth. That is true. But there are cases which are distinctly caused by the presence of a foreskin and which are cured by circumcision. Gowers, the famous neurologist, advocated circumcision[40] for the prevention and cure of certain types of convulsions in children, and in epilepsy. He cites cases cured by circumcision. A. H. Baker[41] reported a case of epileptiform convulsions in a child of five, which were cured by circumcision. Lydston[42] and Moll[43] also emphasized the importance of preventing local irritation leading to masturbation by means of circumcision. In a large series of cases of epilepsy characterized by convulsions without apparent precipitating cause, Block[44] concluded that an adherent foreskin was an important factor in the production of the convulsions. Children mentally backward often show surprising mental progress after circumcision or even after merely freeing adhesions by traction or a probe, provided this separation can be maintained indefinitely. It is interesting to note that an adherent prepuce was found in 11 per cent of his cases. The point need not be labored that all of these conditions which can be improved by circumcision can be prevented, which is far more to the point.

6. *Circumcision Is A Prophylactic Against Local Complications in Venereal Disease.*—In the presence of a tight foreskin, balanitis with extensive ulceration and necrosis of the glans and foreskin may supervene. Suppurating adenitis (bubo) is far more common in chancroid and gonorrhea when a foreskin is present to dam the natural drainage of the pathologic secretions. The dorsal incision, so often necessary to liberate the accumulated debris and expose the original lesion to view, is only a poor substitute for circumcision.

7. *Circumcision Is A 100 Per Cent Prophylactic Against the "Fourth Venereal Disease."*—Obviously without a foreskin and preputial cavity this form of infection cannot occur. The etiologic factors are a tight foreskin which excludes the air, joined with a symbiosis of an anaerobic vibrio and a spirochete. Slitting the foreskin and admitting the air is the prime indication for treatment. It was first described by Battaile and Berdal[45] and later confirmed by Scherber and Müller.[46] Levy-Bing and Gerbay[47] also reported cases of ulcerative balanitis. This condition corresponds in great measure with "erosive and gangrenous balanitis," described by Corbus and Harris.[48]. They state that "as a prophylactic measure the practice of circumcision should be encouraged."

8. *Circumcision Is A Prophylactic Against Tropical Bladder Infection.*—Sir John Thomson Walker[49] recommends circumcision of boys for the prevention of infection with Bilharzia hematobia, and Allen,[50] who practiced for many years in Natal, Africa, made a similar recommendation. It appears that the foreskin has some material influence in inviting the entrance of the bilharzia into the urethra while the victim is bathing in infected waters.

In conclusion, it is worthy of note that the practice of circumcising male infants is rapidly growing because of the demand of parents, despite the veiled resistance of certain medical men which is based on emotional rather than scientific grounds. In a number of American non-Jewish hospitals, it is the invariable rule to circumcise all male infants born there before mother and child leave the hospital. If this rule were adopted universally, most of the conditions herein mentioned would be avoided and a cleaner and healthier race of men would result.


## Summary

Circumcision in infancy is a most valuable hygienic measure for the following reasons:

1. It is a great aid to personal cleanliness.
2. It is a prophylactic against phimosis and paraphimosis and their sequelae.
3. It is a strong prophylactic against syphilis and chancroid.
4. It is a prophylactic against venereal warts and cancers.
5. It is a prophylactic against masturbation, convulsions and other reflex irritative phenomena.
6. It is a prophylactic against local complications in venereal disease.
7. It is a 100 per cent prophylactic against the "fourth venereal disease."
8. It is a prophylactic against tropical bladder and urethral infection.


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"Thank God every morning when you get up that you have something to do which must be done, whether you like it or not. Being forced to work, and forced to do your best, will breed in you temperance, self-control, diligence, strength of will, content and a hundred virtues which the idle will never know."—*Kingsley.*

## INFLAMMATORY TUMORS OF THE SMALL INTESTINE—WITH CASE REPORT.*

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Inflammatory masses have been found in all parts of the gastro-intestinal tract. Many of these masses are the results of definite lesions or specific organisms, and while closely related to the subject of this discussion, they will only be mentioned briefly.

Chronic peptic ulcer in the region of the pylorus not infrequently is the portal of entry for infection of low grade which results in an inflammatory mass. This mass may be indistinguishable from a malignant growth, and when it is not removed, its true nature can only be decided by the recovery of the patient after a palliative gastroenterostomy has been done.

In the small bowel similar masses have been reported following typhoid ulceration of the ileum. Diverticula of the colon are also at times the seat of long standing low grade inflammation which, as a result of the fibrous tissue reaction, may result in a large mass.

The specific organisms which can create an inflammatory mass are the spirochaeta pallidum, tubercle bacillus and the amoeba histolytica.

The gummatous lesions of syphilis are located in the pyloric end of the stomach and in the colon, though rarely the small intestine may also be involved. These lesions have been considered very rare, but in recent years a number of cases have been reported. The syphilitic origin of these lesions has been in some doubt until the recovery of the spirochaeta from such a lesion by Morgan and Harris[1] last year.

On the surgical gastrointestinal service at the Medical College of Virginia in the last three years we have had six cases of obstructive gummatous lesions of the stomach and one of the colon. These patients were not improved by antiluetic treatment and all came to operation. The microscopic picture is that of an intense fibrosis, particularly about the blood vessels, where there are also collections of lymphocytes and endothelial cells with typical giant cell formation.

A number of cases of tuberculomata have been reported, most of them in the colon, but

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Upon author's request because of lateness of hour, read by title at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

Moschowitz and Wilensky[2] suggest that many of them are not tuberculosis but of the nature of the non-specific granuloma. They base their assertion on the failure to find the tubercle bacillus and the absence of the typical tubercle in many of them.

Gunn and Howard[3] reported three cases of inflammatory masses in the colon, the result of amoebic ulceration. Motile amoebae were not found in all of these cases, and where they are not found there must be some doubt of the impression gained by examination of the fixed tissues.

Non-specific granuloma of the intestine was first reported by Braun in 1908 and a number of cases have since been recorded. These lesions are entirely inflammatory and made up of fibrous tissue in various stages of development. The entire mass has the appearance of a new growth and its true nature is often not suspected until it is submitted to microscopic examination. The infection which results in such a tissue reaction is the same in the intestinal tract as in other parts of the body; it is subacute or chronic, and the organisms are of low virulence. The portal of entry into the intestinal wall is through a break in the mucous membrane in an ulcer or an area traumatized by a blow or an injury by a sharp object in the lumen of the gut such as a bone or pin. The infection may gain entrance by continuity of tissue as the cecum from an inflamed appendix. In 1925[4] I reported a massive appendix made up of inflammatory tissue. There were numerous large lymph nodes in the meso-appendix and its appearance was that of a new growth. The thickened wall extended into the cecum and involved the ileo-cecal valve. The cause of this unusual inflammatory reaction was not discovered.

A number of authors attribute the mass in the cecum to a preceding appendicitis, and such is certainly the apparent cause in some cases. Other colon masses have been attributed to dysentery and other colon infections. Moschowitz and Wilensky[2] quote a number of cases attributed to foreign bodies such as silk used on the cecum in removing the appendix (also Mock[5]) bones, cherry seed and pins. They concluded, however, that in most cases it is impossible to discover the cause of the infection.

The gross appearance of these masses is much the same as a malignant growth. When one remembers that often much of the malignant mass is due to secondary infection this is easily understood. The surface is usually smooth and congested and the mass is very hard. Microscopically inflammatory fibrous tissue is seen in various stages of development. Frequently large giant cells are present, having the appearance more of the foreign body giant cell than of any other variety. There is often an abundance of lymphoid cells, but the tubercle arrangement is absent. The reported cases have occurred largely in the cecum, though there are a smaller number of the ileum.

Aside from vague pain, there are no early characteristic symptoms. They later may present a palpable mass or cause obstruction of the bowel and come to operation for relief. A pre-operative diagnosis is rarely made and there is much doubt until it is seen under the microscope or until after a presumed palliative operation the patient recovers and remains well. Coffen[6] reported a case in which there were two recurrences requiring three resections of the ileum. Moschowitz and Wilensky[2] also reported a case of recurrence.

The problem presented to the operator by such a mass is a puzzling one. Where the obstruction to the lumen is marked, particularly in the small bowel, resection is definitely indicated. In the colon some preliminary or palliative operation may result in a subsidence of the mass. Biopsy and section is of little help, because, as noted above, a malignant growth in the intestinal tract is often surrounded by inflammatory tissue. It often happens that resection is little or no more formidable than a palliative procedure, and in such cases and indeed in most others where there is obstruction, resection should be done.

### Case Reports

*Case I.*—I. W., colored, male, age 41 years (St. P., No. 3945).

This patient came to St. Philip Hospital on account of lumbar pain and cramp-like abdominal pain. He had not been well for about three years, but had been able to work until four weeks before admission. During these years of poor health he has had increasing cramp-like abdominal pain coming on very soon after eating. He has lost weight steadily, but attributes this to the very limited diet which he has allowed himself. For four weeks the pains have been more severe and he has had aching in the lumbar region. During this time he has had diarrhea with fresh blood and

mucus in the stools. He has had an inguinal hernia on the right side for many years which has grown considerably larger recently.

Physical examination revealed a man appearing severelly ill who had lost a considerable amount of weight. The skin was loose and dry. The abdomen was slightly distended and showed a soft mass about the size of an orange in the right lower quadrant where there was some tenderness. There was a large indirect inguinal hernia on the right side which was easily reducible. The reflexes were normal. The remainder of the physical examination was unimportant.

*Laboratory Examinations:* The blood showed a moderate secondary anemia, negative Wassermann, normal non-protein nitrogen, and low (60 mg.) sugar. X-ray gastro-intestinal examination, including a barium enema, failed to show a lesion.

Fig. 1.—Case I. The loop of ileum showing ulcerated area with thick wall and the large mesentery with lymph nodes.

During three days in the hospital while these examinations were being made he complained of more pain and the abdomen became more distended. It was thought that the mass was causing obstruction to the small bowel in spite of the normal progress of the barium meal. Operation was advised. On opening the abdomen the mass was found to be located in the terminal ileum and its mesentery. It consisted of six inches of thickened bowel at the distal portion of which was a hard mass. The mesentery was very thick and contained a number of large firm lymphnodes. The whole mass was congested and edematous. The lumen at the site of the greatest thickness was almost completely obstructed. This area of bowel and the involved mesentery was resected, an end to end anastamosis done and an enterostomy made above.

The convalescence was quite uneventful until the day planned for discharge when the inguinal hernia became strangulated. This was operated upon. The terminal ileum, including the site of the anastomosis, was in the sac, and except for the congestion and edema incident to the strangulation, it was normal.

The report on the tissue examination by Dr. Pusch was as follows:

*Gross Description:* A segment of small intestine, 28 cm. long, with mesentery attached. The greatest width of the mesentery is 6½ cm. and its thickness is 1½ cm. the increased thickness being due to fat, edema and enlarged indurated lymph glands. The intestine has a diameter of 3½ cm. at one end while 9 cm. from the opposite extremity the diameter is 6 cm. The serosa of the wider portion constitutes an indurated, smooth, light band nearly encircling the specimen, 2 to 4½ cm. wide and about 3 mm. thick. Elsewhere the serosa is hyperemic and partly covered with fibrinous exudate. At the site of the indurated serosal band the lumen is nearly obstructed by a thick granulation tissue induration of its wall constricting the circumference of the lumen to 2½ cm. At the site of this constriction the mucosa presents several ulcerations, chiefly linear, 1 to 2½ cm. in diameter, which form the orifices of communicating sinus tracts lined by necrotic tissue ramifying in the indurated and thickened wall. These channels effect a recanalization around the obstruction. Above the constriction the mucosa is a purplish-red in color, and diffusely granular with the wall of this portion thick and edematous. An occasional linear ulcer is embraced here also. Below the constriction the mucosa is grayish-pink. This portion is essentially normal, except for a moderately edematous wall. Wedged into the ulcerations at the constriction and distributed throughout the lumen above, are many shell-like fragments, a piece of chicken bone, a few seeds and fragmented fecal concre

tions. Some portions suggest eggshells. Short stiff hairs are also found.

*Microscopic Description:* The ulcer margins and the ramifying intramural tracts are lined by a necrotic debris bordered by dense lymphocytic and histiocytic infiltrations supported by fibroblastic proliferations and vascular endothelial hyperplasia. The tracts involve submucosa, musculature and serosa. The dense granulation tissue induration about them embraces focal mononuclear cell aggregations among which plasm cells are conspicuous. Polymorphonuclear leucocytes occur in some areas. Focal occurrence of diphtheritic membrane contributes the granular appearance of the mucosa above the obstruction. Inflammatory response of a character similar to that at the site of obstruction is seen in this portion. An occasional ameba is recognizable; the poor state of preservation of the specimen renders the identification of many others indefinite.

*Pathological Diagnosis:* Amoebic granuloma of ileum.

Following this report, repeated proctoscopic examinations with bedside microscopic examinations of the intestinal contents were made but no amoeba could be found. There was a shallow ulcer in the rectum, but it did not have the appearance of amoebic origin. This

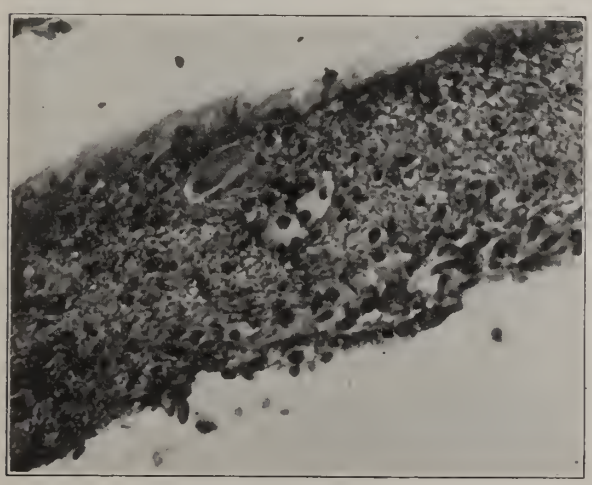

Fig. 2.—Case 1. Photomicrograph of surface of ulcer showing amoeba.

patient was examined nine months after operation and was found to have gained between thirty and forty pounds in weight, and to have been able to do hard manual labor for several months. He has from two to three bowel movements a day and the stools are well formed without blood or mucus. He has occasionally slight abdominal pain. His appetite and digestion have been perfectly normal.

*Case II.*—R. B., white, male, age 35 (Mem., No. 6701) entered Memorial Hospital on November 23, 1932, complaining of abdominal pain and vomiting. He was operated on twenty-two years ago for acute appendicitis and had a ventral hernia. He remained well until five months ago when he had severe abdominal pain and a mass in the ventral hernia. He entered the hospital and was operated upon for this strangulated hernia. At operation only omentum was in the sac. It was noted at this time that there was a reducible left inguinal hernia. He returns to the hospital now with the history of severe cramp-like abdominal pain which had come at frequent intervals since his last admission. This pain has been accompanied by nausea and vomiting and would last about an hour. During the recent attacks the vomitus has been very foul and he has noted loops of distended bowel presenting under the abdominal wall. He has eaten very little on account of the tendency of food to start the pain and vomiting and has lost fifty pounds in weight. His bowels have moved daily and a good stool resulted from an enema taken a few hours before admission.

Examination reveals a man severely ill. The abdomen was quite distended and distinct loops of bowel could be seen. It was obvious that he had intestinal obstruction.

*Laboratory Examination:* The blood showed moderate anemia (65 per cent), slight leucocytosis (W. B. C. 10,600, polys 68 per cent) and negative Wassermann. The urinalysis was negative.

At operation (by Dr. I. A. Bigger) the small bowel was found to be tremendously distended. At the end of this distended gut was found an area of marked thickening of the wall and almost complete obliteration of the lumen. This area had the appearance of inflammatory tissue but suggested malignancy. The area of bowel containing this mass was resected and a lateral anastomosis done.

The report on the tissue examination by Dr. Pusch was as follows:

*Gross Description:* A segment of small intestine 10 cm. long. Two and a half cm. from the distal extremity of specimen occurs an annular induration of the wall produced by a pinkish white, firm, essentially intramural mass, 1½ cm. wide and 1 cm. thick. This includes a few small areas of necrosis with cavi-

tation. The circumference of the lumen at this constriction is 1½ cm. The overlying mucosa is superficially ulcerated. Distal to the growth the wall is essentially normal and has a circumference of 5 cm., while proximal to the constriction the circumference is 9½ cm., the wall diffusely indurated and thickened, and the mucosal surface hemorrhagic and partly covered with plaques of hemorrhagic necrotic debris.

*Microscopic Description:* The annular mass is composed of granulation tissue embracing bulky masses of lymphocytes and capillaries presenting conspicuous endothelial hyperplasia. There are a few small abscesses. The structure is compatible with response to syphilitic infection of which, however, areas of suppuration are not characteristic. Non-specific chronic inflammatory response in lymph node.

*Pathological Diagnosis:* Chronic inflammatory granuloma.

## Discussion

These cases represent granulomas of the small bowel of specific and non-specific origin. The first showed amoebae in the submucosa and exudate, and as is characteristic of the amoebic granuloma, the fibrous tissue reaction was not so marked as in those of bacterial origin. There was no history suggestive of amoebic dysentery, except for diarrhea of four weeks duration, much too short a time to account for the formation of this lesion. Examination of stools failed to reveal amoebae. so there must remain some doubt of the amoebic origin. The second case is typical of the non-specific granuloma except for the absence of giant cells.

It is interesting to note that both these cases had rather large inguinal hernias, and the second one a ventral hernia also. It is possible that the bowel may have repeatedly become incarcerated in the sac of the hernia and that this repeated irritation resulted in the granuloma.

The severe cramp-like abdominal pain brought on by food was the most prominent symptom in each case. As the obstruction became more nearly complete, abdominal distention and vomiting occurred.

There was no combination of symptoms or signs to suggest the correct diagnosis before operation, and, indeed, with the masses exposed and in one case with frozen section microscopic examination of a regional lymph node reported inflammatory, the possibility of malignancy was still great. Short circuiting operations will doubtless cure these lesions but such a procedure in the small intestine is little less formidable than resection and anastomosis, while the latter certainly gives a more desirable result.

## Conclusions

Tumor-like masses due to infection sometimes of known origin, at others unknown, may occur in any part of the gastro-intestinal tract. In the small intestine they are rare, but a few cases have been reported. Here the lesions present localizing symptoms late in their course and are rarely diagnosed.

At operation the picture is confusing and they are usually resected because of the appearance of malignancy or on account of intestinal obstruction. They are unusual lesions, though the number reported in recent years makes it clear that they are not so very rare. It seems certain that many cases reported as tuberculomata are in reality non-specific granulomata, and perhaps, some cases of "cured" cancer are actually cured of inflammatory lesions.

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## Discussion*

Dr. Harry J. Warthen, Richmond: Dr. Williams has covered the symptomatology and treatment of these unusual inflammatory conditions so fully that I will attempt to bring out only a few points with regard to the incidence, etiology and pathology.

Although this condition has been recognized as a definite clinical entity since 1908, when Braun, of Germany, first called attention to it, very little has been written in this country on the subject. During the past decade a few articles have appeared in our literature, but these have dealt chiefly with granulomas of the large intestine, many of which were

suspected or definitely proven to be of specific origin. I have been unable to find any reference to non-specific granulomas of the small bowel in any of the usual text-books or systems of medicine or surgery. A review of hospital records is also misleading as to the incidence, as these cases are likely to be listed under some other heading, usually intestinal obstruction. The variety of names which have been given to this condition has also added to the confusion. It has been variously called granuloma, infective granuloma, chronic productive inflammation, inflammatory hyperplasia, infectious granuloma, pseudo-tumor, and pseudo-cancer—to mention only a few.

The pathology of these inflammatory tumors is better understood but may also be sometimes confusiug. The picture is that of a chronic inflammation in which the formation of granulation tissue predominates. The occasional presence of mast cells, giant cells, and clusters of lymphoid cells may occasioually lead to a mistaken diagnosis of carcinoma on frozen section.

The etiological factor causing such an overgrowth of granulation tissue is sometimes difficult to determine. It is not always possible to demonstrate a non-absorbable suture or some other type of foreign body causing chronic irritation. Pathologists have attempted to explain these cases by some mechanical constriction to the blood supply to the affected part. I do not see why it is necessary to presuppose some circulatory abnormality in the formation of a granuloma. The gastro-intestinal mucosa is constantly subjected to trauma, which may lower the local resistance aud any minute break in the mucosa in the preseuce of a suitable organism may be the starting point of an inflammatory reaction. This same process takes place in other regions of the body, such as the skiu or conjunctiva of the eye, and the surprising feature to me is that it does not occur more frequently in the gastro-intestinal tract. The gradual obliteration of the lumen of an appendix as a response to a low grade infection differs only in degree from the gradual occlusion of the intestine which occurred in Dr. Williams' two cases. It is iuteresting to note that a granuloma is one of the few conditions which can cause a partial or incomplete obstruction of the small bowel. A partial obstruction which does not rapidly become a complete obstruction is a clinical rarity between the ligament of Treitz and the ileo-cecal valve and is usually due to a gradual occlusion arising within the lumen of the bowel. Obstructions of the small intestine are usually due to extrinsic factors as adhesive bands or a volvulus with a rapid onset of complete obstruction.

The incidence of non-specific granulomas appears to vary in direct proportion to the bacterial content of the bowel. In the upper small intestine they are rarely found. The majority of cases reported in the small bowel are situated quite near the ileo-cecal valve. The vast majority occur in the colon and sigmoid. I think Dr. Williams' suggestion that the presence of long standing hernias in the two cases may have been an etiological factor is a very significant one. We have all seen fibrosis of the intestinal wall at the neck of a sac in incarcerated hernias and it is very possible that the trauma associated with hernias may be a causative factor.

If the first case reported by Dr. Williams turns out to be due to an amoebic infection, this, of course, will take it out of the category of non-specific granulomas. If it is an amoebic infection, it will be the first which has come to operation in the Medical College of Virginia hospitals. There have been ten proven cases of amoebic dysentery in St. Philip, Dooley and Memorial Hospitals, none of which came to operation.

Dr. Williams' two cases are quite interesting, and will help in throwing light on an unusual and frequently unrecognized condition.

*Prepared in advance of meeting and handed in for publication.

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## FUNCTIONAL DISORDERS ARISING FROM OVARIAN HYPOFUNCTION.

FRED M. HORSLEY, M. D., Arrington, Va.

Though there are many cases that pass the menopause with few symptoms, and others that lack in ovarian function who have little discomfort, yet there are quite a number who are not so fortunate under these conditions, and either have annoying symptoms or are in a great degree incapacitated by their disorders.

In the opinion of Graves, the majority of cases suffer little inconvenience and sometimes none from the removal of their ovaries. However, many practicing physicians have seen cases who, though belonging to this minority, are greatly affected by the lack of function or absence of these glands.

There are physicians who have gotten good results from the administration of glandular preparations, yet when these are indicated, the amount and kind of dosage for an individual case is not always clear. In fact, the medical profession as a whole is skeptical of any marked, consistent benefit along this line.

We find such men as Zondek, who claims that we cannot obtain any true endocrine effect with ovarian extracts, because, in the preparation, the active principle is destroyed; however, there is an impression among many that in the field of ductless gland therapy lies a great possibility of usefulness. Also, can any one say that all the active principles from these glands are known, and, if not, can it be said that they are all destroyed in the preparation of their therapeutic values. Dr. William Osler, who in his time leaned to drug nihilism, said: "There is perhaps no more fascinating story in the history of science than that of the discovery of these ductless glands. The study of the interaction of these internal secretions, their influence upon development, upon mental processes, and upon disorders of metabolism, is likely to prove in the future a benefit scarcely less remarkable than that which we have traced in the infectious diseases."

Dale also expresses the thought that autopharmacologic substances play a dominant

role within the body, in respect to its structure, its maintenance in health, and its preservation in times of invasion by diseases. There is a certain degree of knowledge already obtained concerning the function of the ductless glands; and treatment derived from their tissues or active principles have gotten more or less definite results.

Standardization, chemical analysis, physiologic and biologic knowledge of these, however, is hard to obtain, and this limits the usefulness of preparations derived from this source for treatment. The variability of the function of the endocrines is another puzzling factor; for a hyperthyroid case may become a hypothyroid condition, and doubtless this applies to the other regulators.

Barker states "That pluriglandular diseases are pathological processes; a general constitutional inferiority is mainly responsible. Exciting causes may be some noxa, as alcohol, infection, tuberculosis, syphilis, etc., that further limits the functions of the constitutionally feeble glands." Doubtless, too, there are border-line cases that are just limited in function from causes unknown.

The comparison, therefore, of clinical results should be one way of obtaining more accurate knowledge as to this problem.

Having treated a few cases with some definite results, even by oral administration of glandular preparations, I shall sketch some parts of their history which may be of some aid to others. I know that these are too few for definite and final conclusions, but they may suggest points of interest and helpfulness in treatment.

These cases, five in number, to which a few more could be added, come from those seemingly in various degrees of health, and as far as I could find, not influenced by heredity. Though there were a variety of symptoms, a common cause for their trouble apparently could be traced and gave some clue to treatment.

*Case* 1.—Approximately eight years ago I was called to see a colored woman, married, thirty-three years old and without children, who was having violent convulsions of a tonic and hysterical nature but with so much opisthotonos that I suspected strychnine poison. Coming from these attacks, nausea, headache, blindness, intermittent breathing and pain over the mastoid were some of her symptoms. Later, the pain migrated to the right lower abdomen. As the condition progressed, coma followed the convulsions, and she passed into a complete state of coma, interrupted by intermitten convulsions so severe that she had to be held in bed. This condition lasted for three days and I could give no relief from sedatives of any kind. Her relatives had given up hope of life and stayed in attendance day and night. Upon the third day it came to me that the ovaries had been removed from this woman about two years previously, so I gave her fifteen grains of ovarian substance a day with no results, but, upon doubling the doses to thirty grains, she recovered completely in twenty-four hours. About three years later, after she had been engaged in her usual housework, I was called to see her. Up to this time her health had been good, as far as I knew.

At this time a slight drowsiness, stupor and nervous manifestations were found present, which was relieved by about a ten-day treatment of ovarian substance mixed with a small quantity of thyroid and pituitary whole gland.

On February 20, 1933, while living and working in Washington, D. C., she became sick and was taken to the George Washington University Hospital. From a copy of her history kindly sent me by Dr. Jno. A. Reed, Director of the Out-Patient Department, I find at that time the patient's complaint was headache and dizziness. Retinal hemorrhage and sclerosis were found upon examination. Blood pressure 210/88. Diagnosis—hypertensive heart disease—arterio-sclerotic heart disease. Blood sugar 221 mgs. Sugar in urine. She was placed on a diet.

March 28th, the patient returned home and I found sugar in her urine, though she was on a restricted diet; there was also a weakened condition and stupid appearance. A mixed treatment as formerly given, after about three weeks, brought her around so that she did her own work and felt well. The lowered mentality disappeared. Losing sight of the case, she went on a normal diet July 23rd, and a month later I found no sugar in her urine. On September 5th blood pressure was 175/90, and there was no sugar in urine. At one time after glandular treatment her blood pressure became normal but did not remain so.

*Case* 2.—A single, white girl, thin, nervous and anemic, seventeen years old, according to her history, menstruated three days and some times three months apart. First attack began

about 1928. Sudden sharp pain over right ovary, extending down right lower back and front of right leg, with headache and nervousness. This lasted a week. In 1931 she had a fall and this started another attack. Off and on all that year her health was wretched.

During June, 1932,, I first saw her with an attack which consisted of hysterical—mostly tonic—convulsions, coma, nausea, vomiting, irregular intermittent breathing, paresthesias, pains, cramps—especially over abdomen—and hot flashes. Oral administration of ovarian substance and small quantities of whole pituitary and thyroid relieved her, but not so quickly as Case No. 1. In August another attack returned, but with this there was temperature, tenderness over McBurney's point that was constant, nausea and vomiting—more pronounced than usual—so I sent her to the University of Virginia for an appendectomy. The surgeon who did this work told her she had a "baby rattler" around her appendix—evidently a constriction.

For some months after this operation there was complete relief from former symptoms; but about April, 1933, one of her old neurotic attacks returned and this I could not control with my former treatment, nor with other manufactured products of like nature. Sedatives, even morphine and hyoscine, had little effect. Finally, after some weeks in desperation, I used a mixed preparation of ovarian, mammary and placental substance with the posterior pituitary gland, which gave relief quite suddenly.

Though relief was complete as to symptoms and feelings of patient, she passed by her menstrual period that was due in six days, and had a natural full time flow a month later.

At her last attack in August, the same combination as used above relieved more slowly and had to be doubled in quantity over a period of days before results were obtained, as the condition in a modified way held on for four or five days before it disappeared.

*Case* 3.—A colored woman, thirty-nine years old, married four years, no children, menstrual periods scant and lasting three days. In 1918, following influenza, she had hay-fever, and swimming in the head—which lasted a day. In 1932 another attack of hay-fever came on. On July 14, 1933, I saw her with a severe toothache and swollen face, from which she became delirious and unconscious, with intermittent breathing.

Ovarian substance combined, as in my former cases, gave her relief in a few days.

*Case* 4.—A well developed white girl, fifteen years old. Menstrual periods began in April of this year and only lasted three days. At thirteen years of age she had a severe attack of ovarian neuralgia, with sharp pain over left ovary, cramps and a fainty feeling. July 24, 1933, another attack of ovarian neuralgia took place, accompanied by headache, hot flashes, intermittent breathing and coma. Ovarian substance in combination, as used before, gave relief, but another attack was brought on by hearing of a husband beating his wife. Further treatment, however, corrected her condition.

*Case* 5.—A widow, white, thirty-seven years old, two children—six and three. Menstrual history normal until after birth of first child, when nearly a year later an attack of discomfort and cramping pain over stomach annoyed her. In five months this condition returned, and then became gradually more frequent; her menstrual periods became scantier and farther and farther apart until they were at intervals of four or five months. The cramps and pain over the stomach were usually relieved by vomiting, though sometimes a sedative was needed. In 1932, seven X-ray pictures were taken of her stomach and no pathology was found. The ovarian combination has been giving relief for three months since she commenced it, though previously this trouble had been coming several times a week. After three weeks' treatment on one capsule, containing two grains of ovarian substance, given t. i. d., she was able to get relief after dropping back to a dosage of one capsule a day.

## Discussion

Some of these cases might have been taken for hysteria, or psychoneurosis, but closer observation and investigation of the menstrual histories and child bearing capacity attracts ones attention to the possibility of the trouble arising from ovarian deficiency.

The symptoms in these cases are variable, though there are some symptoms in common, especially that relating to their cause.

Like hysteria, there may be many and varied nervous manifestations in these conditions, but it is unlike hysteria in that the bodily functions are supposed to be controlled by ideas; yet with this there is no control. Though each case is a law unto itself, as to the amount of dosage and the time it should be continued,

this can be worked out by observation. Evidently very large doses are needed for relief where the symptoms are extremely aggravating or profound. The lack of endocrine activity must have an accumulative effect for harm, as in the toxemias of pregnancy; also shocks of various origins, physical or mental, may bring on an attack when the underlying cause is present.

Judging from Case No. 2, it seems probable that at times other endocrine aid is needed to cause the ovaries to function. Though the above case was relieved of her trouble six days before the time for menstruation, she passed by this period and had a normal flow a month later. This indicates the therapeutic aid which gave relief was not the same principle that established her menstrual cycle. Case No. 5 shows a definite neurosis of one special organ, and in this is different from the others. The lack of uniformly good results from the same treatment in a given case causes one to think that other glands become effected in the course of time.

## THE INDICATIONS FOR POSTERIOR GASTRO-ENTEROSTOMY.*

H. H. HURT, M. D., Lynchburg, Va.

Since Wolfler, while working in Billroth's Clinic, did the first gastro-enterostomy in 1881, the indications for this operation have been a subject for argument by the surgeons and medical men who have had occasion to study and treat diseases of the stomach and duodenum. Wolfler's first case was one of cancer of the stomach. In 1892, Doyen performed the first gastro-enterostomy for gastric ulcer, and reported that after two years the patient's symptoms had not recurred. Codivilla is credited with first having used this procedure in the treatment of duodenal ulcer.

There are six pathological conditions in which gastro-enterostomy is sometimes, or always, indicated. I will enumerate these briefly, and later discuss the more important ones:

1. Duodenal ulcer.
2. Gastric ulcer.
3. Cancer of the stomach or duodenum.
4. Congenital hypertrophic stenosis of the pylorus.
5. Erosion of the pylorus by caustics, with resultant stricture.
6. Certain cases of dilatation of the stomach where there is obstruction at the crossing of the superior mesenteric vessels.

The last three types of cases are rare, but are listed by Moynihan as being amenable to gastro-enterostomy.

### Duodenal Ulcer

The indication for surgical treatment of duodenal ulcer has been a much discussed subject, and surgeon and internist are not yet in entire agreement. Close cooperation between surgeon and internist is essential, however, in the management of these cases.

We are all more or less agreed that certain complications, such as perforation, obstruction and recurrent hemorrhages when on adequate treatment, are definite surgical indications. The contention has arisen in the management of the uncomplicated, but chronic duodenal ulcer. In considering these cases from the standpoint of medical management, we must take into consideration the economic and social status of the patient, and his willingness and ability to adequately adhere to a strict regimen. I think all surgeons now agree that if a patient is capable and in a position to undergo a thorough course of medical treatment, then surgery should not be resorted to until hope of cure by medical management is despaired of or complications arise. Dr. W. J. Mayo once defined medical failure as occurring "after nine complete and permanent cures."

As a general rule, it has been found that young and high strung individuals, particularly of the Jewish race, do better on medical management. It has also been found that persons with nephritis and hypertension do not stand alkalinization well. We must consider many factors in deciding whether to operate or not, and must decide each case as an individual one.

Having decided that a case should have surgical measures, we find that there are three types of operations which are ordinarily used in the treatment of duodenal ulcer. Every one agrees, however, that no single type of operation is suitable for all cases, and that the type of procedure carried out must be fitted to suit the conditions found at operation.

These three types are:

1. Gastric or duodenal resection.
2. Pyloroplasty.
3. Gastro-enterostomy.

In Europe resection has been quite fre-

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quently done in treating duodenal ulcer since Finsterer first proposed it in 1913. He brought forward this treatment because of the poor results obtained following more conservative procedures and reliable reports from European clinics for the less extensive procedures have been discouraging. The mortality rate following resection has been the main argument against it. It is a much larger operation than pyloroplasty or gastro-enterostomy, and, consequently, the mortality will be higher, although several European operators report mortalities as low as 2 or 3 per cent. The rate at the Mayo Clinic for this operation is 10 per cent, and Moynihan reports his rate to be 5 to 10 per cent. The discrepancy in these figures is probably due to the fact that in this country resection is largely reserved for the patients who have more extensive trouble, while in Europe this is not the case.

Walters, who made a tour of the European clinics in 1930, states that the peptic ulcers seen in Europe are different pathologically from the ones seen in this country. He states that they are frequently multiple and usually complicated by an associated gastritis. European observers find the ratio of gastric to duodenal ulcers much higher than we do in this country. These facts may account for the favor which resection enjoys in the treatment of duodenal ulcer by European operators. Most surgeons in this country reserve resection for the complicated cases of duodenal ulcer, preferring either gastro-enterostomy or pyloroplasty, both of which give good results and are safer procedures, particularly in the hands of the occasional operator.

Pyloroplasty was first devised in the 1880's, the classical one being that of Heineke-Mikulicz. The Finney pyloroplasty, reported in 1902, gave impetus to this type of operation for duodenal ulcer in this country. Many types of pyloroplasty have been developed and most of them give good results in the treatment of duodenal ulcer. A very satisfactory pyloroplasty is that of Judd, which consists in the removal of the ulcer with the anterior wall of the duodenum and the anterior two-thirds of the pyloric sphincter, closing the opening transversely. This operation does away with the sphincteric action, allowing the stomach to empty readily and the alkaline duodenal content to regurgitate into the stomach. It is physiological in principle and easy to perform. Judd says it can be used in 50 per cent of the cases, and gives good results in 90 per cent of the cases. It might be said that pyloroplasty is the operation of choice in the treatment of duodenal ulcer. That being the case, and resection being reserved more or less as a last resort from a surgical standpoint, the contra-indications to pyloroplasty would be the indications for a gastro-enterostomy.

I will briefly sum up the contra-indications to a pyloroplasty.

Pyloroplasty should not be attempted if technically too difficult, due to adhesions and deformity around the duodenum. Peri-duodenal inflammatory reaction is a contra-indication. A perforating ulcer on the posterior wall which could not be excised is best treated by gastro-enterostomy instead of pyloroplasty. Multiple lesions where the excision would entail great technical difficulty would be a contra-indication. Let it be remembered, however, that the contra-indications are all relative, and each case must be judged on its merits.

Having mentioned in general the contra-indications to pyloroplasty, let me mention the type of case in which it produces the best result and should be done in preference to gastro-enterostomy, even in the face of difficulty. That type of case is the so-called "ulcer former." It is the young individual, with a high lying, hyper-motile and hyper-acid stomach. These cases are particularly apt to form an ulcer around a gastro-enterostomy stoma and do much better with some type of pyloroplasty.

So we see that in general the contra-indications to pyloroplasty are the indications for gastro-enterostomy in the treatment of duodenal ulcer. In viewing the problem from this point one would gather that gastro-enterostomy is perhaps a vicious operation. This, however, is not the case, but it is not; nor is pyloroplasty or any other surgical procedure ideal in the treatment of duodenal ulcer. If there were such a procedure, that and that alone would be the operation which gave by far the best results and would cure the disease and be without complications.

In defense of gastro-enterostomy in the treatment of duodenal ulcer it might be quoted from Horsley that "Gastro-enterostomy has the largest field in the treatment of peptic ulcer of any operation." Sanders states that

"The simplicity of gastro-enterostomy, its safety and efficiency make it the most firmly established of all operations on the stomach." Gastro-enterostomy has stood the test of time, it is easy to perform and can be done in all cases. Its good results in the hands of even the occasional operator have been shown to be 80 per cent, and in the hands of the skilled surgeon 90 per cent. The worst complication is gastro-jejunal ulcer, but this occurs in only 2 to 3 per cent, and other types of procedure are not free from a similar complication. Hemorrhage following gastro-enterostomy for duodenal ulcer was noted in 9 per cent of a series of five hundred cases, but only one of these proved to be fatal. This small percentage of fatal hemorrhages following gastro-enterostomy for duodenal ulcer is thought by Dr. W. J. Mayo to be quite significant. Since the improvement in the mechanics of gastro-enterostomy, the so-called vicious circle has all but disappeared as a complication.

A very interesting observation is that of Balfour, who found that a series of cases who had had gastro-enterostomy done for duodenal ulcer five years or more showed a mortality rate lower than the mortality rate expected for a similar age group.

### Gastric Ulcer

Peptic ulcers on the gastric side of the pyloric muscle, while not as frequent as on the duodenal side, have been shown to be prone to become malignant. It has been stated that there is no essential difference between the gastric and duodenal ulcers except the cancer potentiality. This difference is indeed an important one, and consideration for it alters the treatment of gastric ulcer from that of duodenal ulcer. The danger of malignant change in a gastric ulcer has led both surgeon and internist to agree on earlier and more radical surgical intervention. Some have gone so far as to say that all chronic gastric ulcers should be operated upon. Most agree that surgery is indicated unless the diseased condition ameliorates under a short course of treatment.

In the surgical treatment the same procedure as for duodenal ulcer is used, but with modifications such as suit the individual case. A prime indication in any procedure in the treatment of gastric ulcer is the removal of the ulcer itself no matter what type of procedure is used. This, though technically difficult at times, can usually be done, and the relief from worry as to whether the lesion was benign or an early malignancy is worth the added risk and difficulty of its removal.

Partial gastrectomy in the treatment of peptic ulcer has enjoyed its greatest popularity in the treatment of the ulcer of the pyloric region of the stomach. This operation removes the ulcer bearing area of the stomach, and, while it does not remove the portion of the stomach from which the hydrochloric acid is secreted, the acidity of the gastric secretion is found to be lowered after the removal of the *pars pylorica*. Gastric resection, however, is a big operation and carries, even in the hands of the most skilled, a considerable mortality. But for this fact it would doubtless be the operation of choice in most cases of ulcer in the pyloric region. It can be said that it is the indicated operation where there are multiple ulcers or a large ulcer near the pylorus.

Pyloroplasty with excision of the ulcer is an admirable and safe operation when the ulcer is near the pyloric sphincter or associated with a duodenal ulcer. Pyloroplasty has not, however, been used as widely in the treatment of gastric ulcer as in duodenal ulcer. If used it should be combined with local excision of the gastric lesion, either by knife or cautery method.

Gastro-enterostomy has been preferred to pyloroplasty in the gastric ulcer cases. It is combined with local excision of the lesion unless the ulcer is so placed that the risk of removal outweighs the risk of malignancy. This risk of malignancy has been shown by Wilson and MacCarty to vary directly with the size of the lesion.

Results at the Mayo Clinic have shown that 75 per cent of the gastric ulcers occur in a relatively small area along the lesser curvature, and these, when treated by local excision, combined with gastro-enterostomy, give good results in 90 per cent of the cases. The mortality rate is lower than for a resection, and it would seem that the conservative operation with such good results would be preferred, certainly if technical difficulties bade fair to make resection too risky. For the ulcer far removed from the pylorus, out of the range of a resection, whether on the lesser curvature or in the cardiac portion of the stomach, gastro-enterostomy is the operation of choice and gives uniformly good results.

There is another type of ulcer of the stomach which has not been mentioned, which is very interesting. This is the ulcer with hour-glass contracture. These are usually associated with small ulcers. Sleeve resection of the contracture is the mechanically ideal procedure, but, unfortunately, carries a higher mortality than less radical operations. Anastomosis between the two pouches has given good results. Gastro-enterostomy, utilizing the upper segment, is usually easy to perform and gives uniformly good results. It might almost be said of gastro-enterostomy that it will give good results in any gastric or duodenal condition in which there is obstruction.

### Gastric or Duodenal Cancer

These will be considered together since duodenal cancer is rare and the indications for gastro-enterostomy are the same in both conditions.

The prime indication in any malignancy is to remove or destroy the malignant cells with safety to the patient. Unfortunately, this is too often impossible. The next best is to do that thing which will provide the patient with the greatest number of days of comfortable and useful existence between that time and the time of his inevitable death from the malignancy.

Having decided that a neoplasm cannot be removed with safety or any promise of cure, then, one must decide whether the growth is or will cause obstruction. If so, then a short circuiting operation around the malignancy gives relief to the distressing vomiting which follows obstruction in the stomach or duodenum. This operation is well borne by even debilitated subjects and the relief afforded is quite gratifying. To be successful, however, the stoma should be large and well removed from the malignant growth.

Balfour has been disappointed in gastro-enterostomy as a palliative procedure in obstructing cancer. He looked up a series of cases once and found that the ones with gastro-enterostomy lived only one month longer than the ones who were only explored and nothing else done. He reserves the palliative gastro-enterostomy for the patient with a small lesion but which for some reason cannot be removed.

On rare occasions it will be found that a patient will have a resectable lesion but will be in such a precarious state of health from starvation that a preliminary gastro-enterostomy will allow him to build up to such a point that he will be able to withstand resection.

Very rarely, too, lesions outside of the stomach and duodenum will cause obstruction to the duodenum. Such a thing is possible in cases of carcinoma of the head of the pancreas. These cases are relieved by gastro-enterostomy and, if provision is made for the flow of bile, will, in some cases, live quite a while.

### Summary

Gastro-enterostomy is an old operation, having stood the test of time for fifty years, and given good results in 80 to 90 per cent of the cases for which it has been used in the treatment of peptic ulcer. The percentage of recurrences after gastro-enterostomy is small. It protects against fatal hemorrhage. It is relatively easy to execute and can be undone if not satisfactory. It meets the requirements as a palliative procedure in malignancy of the stomach or duodenum with obstruction.

Let us remember, however, that gastro-enterostomy is never indicated except in the presence of organic and demonstrable disease. "Fallen stomach," gastric neurosis, or nervous indigestion, have never, nor ever will be benefited by a gastro-enterostomy.

*Allied Arts Building.*

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## CERVICITIS, PRENATAL, PUERPERAL AND POSTNATAL PROPHYLAXIS.*

J. W. HENSON, M. D., F. A. C. S., Richmond, Va.

In the rapid progress shown in most lines of endeavor during the past forty years, the medical profession has been no laggard. One of the high lights marking its advance has been the steadily growing realization of the importance of the first part of its dual responsibility.

Prophylaxis in medical diseases has grown rapidly. Its progress in surgical affections has not been so rapid, though the workers in this field have been just as diligent. In medicine, for example, prophylaxis has accomplished much in typhoid fever, malaria, hook worm disease, infantile diarrhea, tuberculosis, typhus fever and a number of other diseases. In the field of surgery, cancer, gastric and duodenal ulcers, appendicitis and cervicitis, with their complications and sequelae are still with us.

*Read before the Richmond Academy of Medicine, June 13, 1933.

This paper presents three distinct objectives: decrease in the number of cases of puerperal sepsis, decrease in the number of cases of postnatal cervicitis and prevention of the many disagreeable and often grave complications and sequelae of postnatal cervicitis. There will, therefore, be three headings, and under each will be discussed the means to be employed to accomplish the corresponding objective.

First, the prenatal care of the pregnant woman should include attention to cervicitis, if present, for reducing the number of cases of puerperal sepsis.

It has been found by the most careful obstetricians that there are a number of cases in which, in spite of the fact that there were no vaginal or rectal examinations made during delivery and no contamination of the vagina for several weeks before delivery, puerperal sepsis will develop.

Miller, Martinez, and Hodgdon, of Pittsburgh, have made direct cultures from 175 cases of chronic cervicitis in pregnant women, finding some type of streptococcus in over 10 per cent and the streptococcus hemolyticus in approximately 4 per cent of this group.

I feel sure that the majority of obstetricians will agree with these authors that, in 90 per cent of what are considered normal deliveries, decided bruising of the cervix and lacerations of varying degree occur, thus providing a condition favorable for infection.

The conclusion of these writers, in view of the above findings, is that at least 4 per cent of women who go through pregnancy with chronic cervicitis, untreated, should and would have puerperal sepsis except for individual resistance and they recommend the use of the cautery in the early months of pregnancy as a safe and efficient treatment.

Hoenig claims that over 50 per cent of parous women and a number of nulliparae have chronic cervicitis. Strachan claims that from 75 per cent to 80 per cent of women who have borne children and from 10 per cent to 25 per cent of women who have not borne children have chronic cervicitis.

I believe that every woman who is found to be pregnant should be examined without delay to determine whether she has chronic cervicitis so that, if a positive diagnosis is made, treatment can be given in the early months. While surgical diathermy, lightly applied two or three times at intervals of six weeks, is safer and more efficient than the cautery, there is danger that either method may cause abortion. I prefer using 10 per cent or 15 per cent silver nitrate at intervals of a week or ten days. While this treatment will not cure cervicitis, it will produce an apparent cure, thus minimizing the risk of puerperal sepsis.

In addition to frequent periodic urinalyses and blood pressure readings for the purpose of obtaining early recognition of toxemia, pyelitis or nephritis, the pregnant woman should be put in the best possible physical condition so that her resistance to infection may be of the best.

Second, the treatment during delivery and immediately following delivery should be directed to prevent, if possible, the occurrence of cervicitis.

Without discussing in detail the care to which a woman in confinement is entitled, I wish to emphasize the following points: Plenty of time should be allowed for complete dilatation of the cervix, using the recognized drugs to aid this when necessary. Forceps, when necessary, should be in the hands of one whose experience is an established fact. A careful examination of the cervix should be made immediately after delivery.

Cervical tears, small or great, should be repaired at once with the strictest observance of aseptic surgical technique.

Third, the later postnatal treatment should be carried out for the cure of cervicitis, thus preventing the disagreeable complications and sequelae, and providing favorable conditions for future conception and delivery.

Before taking up the question of this treatment, I wish to discuss briefly, and for the sake of emphasizing their importance, the many grave conditions, some or all of which will inevitably follow an uncured cervicitis, and, further, I wish to stress the frequency with which cervicitis will manifest itself a few weeks after delivery and point out that other pathology, both recent and old, may be found and must be cared for.

The histologic structure of the mucosa of the cervical canal is such that it is susceptible to infection which, once established, remains and progresses unless the racemose glands are radically removed.

In spite of the experiments of Cornét, Poiriér and others, I am with those who believe that the arrangement of the lymphatics in the cervix and body of the uterus, utero-sacral and broad ligaments, tubes and ovaries,

offers provision for many complications and sequelae, among which may be enumerated the following:

Enlargement and induration of the cervix and body of the uterus.

Lymphangitis of the bases of the broad ligaments.

Lymphangitis of the utero-sacral ligaments.

Pelvic cellulitis.

Salpingitis, pyosalpinx.

Development of retention cysts of one or both ovaries, ovaritis, ovarian abscess.

Dysmenorrhea.

Sterility.

As remote sequelae may be mentioned arthritis (Rosenow, Moench, Sturmdorf and others); carcinoma of the cervix (Hoenig, Davis, Matthews, Miller, Bailey, Strachan and others). Ewing states that chronic cervicitis precedes cancer of the cervix in the majority of cases. Mayo states that 60 per cent of the cases of cancer of the cervix are traceable to chronic cervicitis.

Cervicitis will be found in many women some weeks after delivery, though their cervices were healthy before and during pregnancy.

I feel safe in asserting that the reason for this, in over 90 per cent of such cases, is the exposure of an area of the mucosa of the cervical canal, where tears have been uncared for or improperly cared for, and occasionally where incomplete union has occurred in spite of stitching under the best conditions.

Every woman from six to eight weeks after delivery, should be examined through a vaginal speculum. If cervicitis is present, with or without complications, it should be treated at once by surgical diathermy and cured before treating complications, if present. If pronounced tears are present, whether old or the result of the recent delivery, they should be repaired by denudation and stitching after curing cervicitis, if present. If one finds elevations or nodules caused by tears whether recent or old, the nodules should be reduced to the level of the tears by electro-coagulation after curing the cervicitis, if present.

One may find a very large cervix. Such a cervix should have repeated more-or-less cone shaped electro-coagulation treatments until it is reduced to normal size or nearly so, thus reducing the weight as well as curing the cervicitis, if present.

If these treatments are properly done and followed up, the cervix and its lining will be left in a healthy condition, thus avoiding subsequent, more-or-less grave complications and sequelae, and leaving conditions favorable for future conception and delivery. Any woman suffering from continuous pelvic disease is seriously handicapped, whatever may be the stratum of society in which she finds herself.

In a former paper (*Virginia Medical Monthly*, March, 1932) advocating surgical diathermy for the treatment of chronic cervicitis, a description was given of the technique in detail. A description of the technique, somewhat condensed, will here be given to emphasize some points in this paper, and to introduce some changes.

Being convinced that a permanent cure of chronic cervicitis could only be obtained by removing, not only all visible diseased tissue (erosion, so-called), but the entire racemose gland bearing area surrounding the cervical canal, I began, several years ago, the practice of destroying by electro-coagulation a more-or-less cone shaped piece of tissue surrounding the cervical canal, the base being the diseased area around the external os and the apex approaching the internal os—a Sturmdorg operation without the knife. No claim to originality in the use of surgical diathermy in the treatment of chronic cervicitis is made. There were a number of men at widely separated points over the entire country who began the use of this treatment for chronic cervicitis at about the same time, the technique devised by each being more-or-less different from that of the others.

One treatment is usually sufficient. Of course, if any of the racemose glands are left, further treatment will be required. The presence of the discharge characteristic of endocervicitis, occurring several weeks after an apparent cure, indicates the need for further treatment.

Instead of using, as recommended in a former paper, any one of the several active electrodes made for electro-coagulation of tonsils and depending on pushing this electrode into the cervical tissue when the current is on, I now have a special steel needle made, 10 inches in length by 1/16 of an inch or a little less in width. One end, for about 7/8 of an inch, is triangular (three cutting edges), and terminates in a sharp point. Soft rubber tubing insulates the shaft of the needle, the 7/8 of an inch at the spear-like end, and a small space

at the opposite end for the attachment of one of the cords from the diathermy outfit, being left uncovered.

This needle, on account of the construction of the active end, can be easily introduced into the toughest cervical tissue the desired direction and depth before the current is turned on. The current is turned on by a foot switch and in a few seconds the tissue around the needle is coagulated (turns white). One should not use the current of such strength or for such length of time as to produce rapid dehydration and charring of the tissues, which might result in the formation of scar tissue.

After the introduction of a vaginal speculum, which, by the way, is used as the indifferent electrode, the cervix and its canal should be cleansed, and around the former should be injected, at several points just below the cervico-vaginal junction, a local anesthetic, and the cervical canal packed with cotton saturated with the solution used in the syringe.

I use, with good results, a solution containing nupercaine 1 to 250 and adrenalin chloride 1 to 40,000, waiting ten minutes before beginning the electro-coagulation. The cotton is now removed from the cervical canal, the cervix is grasped by a Vulsella forceps and, the direction of the cervical canal having been ascertained by probe, the needle can be introduced accurately.

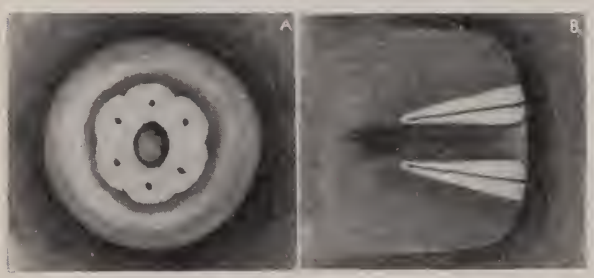


Plate 1.

Plate 1 illustrates (A) how the needle is introduced at various points around the external os, and (B) pushed inward in such direction as to approach the canal near the internal os. The distance of the needle puncture from the margin of the external os must be determined by the size of the diseased area around the os.

When there is little pathology beyond the external os, the needle may be entered about 1/8 of an inch external to it and pushed in almost parallel to the canal. The needle should not be introduced near the outer border of the diseased area as a rule because, by so doing, the coagulation would extend outward further than necessary unless the cervix is very large. The distance that each path of the needle should be from its neighbor, in order to properly coagulate a cone of tissue, can only be learned by observation and experience.

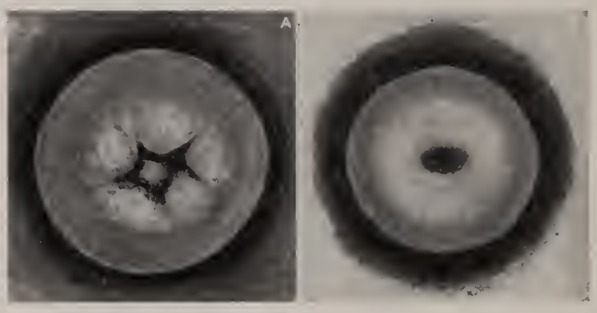


Plate 2.

Plate 2 illustrates a cervix (A) with endocervicitis, multiple tears and irregular nodules, and a cervix (B) which has been treated by the cone shaped electro-coagulation for endocervicitis as shown in Plate 1 (A). The same result, Plate 2 (B), can be obtained from treating a cervix, Plate 2 (A), first by the cone shaped coagulation method, and, later, by the reconstruction use of coagulation for the irregular nodules surrounding the external os.

I have never seen stenosis follow the surgical diathermy treatment of cervicitis. The resulting cervical canal and external os are usually about normal upon evidence obtained by inspection, palpation and instrumental examination, and there is no evidence of scar tissue.

I will report two cases, each representing a distinct type.

Case 1. Mrs. H. B., primipara, white, twenty-five years of age, had no cervicitis before delivery. Labor was extremely easy, pains mild, and delivery was completed without aid other than external manipulation.

There were two tears in the cervix about ½ of an inch and 1 inch deep, respectively, which were stitched promptly and with close attention to aseptic technique. An examination through a vaginal speculum eight weeks after delivery showed complete union of the tears, and a perfectly healthy condition of the cervix.

Case 2. Mrs. D. E. G., primipara, white, thirty years of age, had no cervicitis before delivery. All measurements were a little less than normal. Dry labor—twelve hours in du-

ration; pains severe: cervix torn from the middle of the posterior lip to the cervico-vaginal junction.

Under strictest asepsis this tear was repaired immediately after delivery. An examination through the vaginal speculum eight weeks after delivery showed that the repair was successful to about ¼ of an inch or less from the margin of the posterior lip.

In addition to this small notch there was shown a narrow, semilunar, strip of cervical mucosa and a discharge of a character to indicate endocervicitis. One treatment of surgical diathermy was given. An examination six weeks later showed a healthy, normal, external os and cervical canal.

By the surgical diathermy treatment in Case 2 the woman was not only put in a better condition for future conception with a lessened possibility of sepsis after delivery, but was relieved of the risk of the many complications and sequelae that a continued chronic cervicitis entails.

The follow-up treatment to the time of healing after the use of surgical diathermy in chronic cervicitis is described in a former paper.

### Summary

1. On good authority 75 per cent to 80 per cent of multiparae and 10 per cent to 25 per cent of nulliparae have chronic cervicitis.

2. Probably 10 per cent of these would show, on direct culture, some variety of streptococcus, and probably 4 per cent would show streptococcus hemolyticus.

3. About 4 per cent of pregnant women who have chronic cervicitis, if left untreated, should and would have puerperal sepsis except for individual resistance.

4. If chronic cervicitis be carefully treated in the early months of pregnancy, the risk of puerperal sepsis will be minimized.

5. The proper care of a woman during delivery and the immediate postnatal care of a torn cervix will minimize the occurrence of postnatal cervicitis.

6. From six to eight weeks after delivery every woman should be examined with a vaginal speculum. If cervicitis be present, it should be treated by surgical diathermy, securing a cure.

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*Medical Arts Building.*

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## A RATIONAL TREATMENT OF PYLOROSPASM IN INFANTS.*

CHAS. P. MANGUM, M. D., Richmond, Va.

Spasmodic closure of the pylorus in infants has been described under a number of different terms. It was first known as "watery gripes." White, of St. Louis, calls it "infantile gastroenteropspasm" or "antonomic imbalance." Holt and Howland classify it under the heading "neuropathic infant," while Haas and others have called it one of the hypertonic diatheses."

Every physician is familiar with the fretful infant, one to six weeks of age, who may cry during or immediately after a nursing; seem decidedly uncomfortable and restless until relieved by vomiting and not infrequently having a stool at the same time. Occasionally the taking of water will result in the same phenomenon. The vomiting may be simple regurgitation or projectile in type. The stools may be undigested and loose, normal or constipated. They may present any one or all of these characteristics in the same infant. The nutrition may or may not be markedly affected, depending upon the duration and remissions of symptoms. Anhydraemia is rarely present until the terminal stage of this condition which is usually associated with some intercurrent infection.

It is most improbable that the pylorus alone should be involved in spasm. The whole gastrointestinal tract is involved to a greater or lesser extent. In cases where the emaciation is sufficient, hyperperistalsis may be seen and felt. In my experience all these infants are hypertonic. The skeletal muscles offer resistance to passive movement, the extremities are flexed, and these babies react unduly to noises and fright.

Vomiting being sometimes noted in hypertonic infants with laryngospasm associated with altered calcium metabolism, who respond quickly to calcium therapy, led to an investigation of the possibility of pylorospasm being due to the same calcium disturbance.

The following report is of a case selected

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from forty-three cases of pylorospasm subjected to this study:

Baby "A," age 7 weeks, weight 9 pounds 9 ounces.

Delivery was normal; birth weight was 7 pounds 14 ounces.

Family history was negative. There are two brothers who developed normally, ages two years and six months and six years, respectively. This baby seemed to do well until it was about four weeks of age, except that the mother noticed it cried more than she thought it should and the cry was high pitched and shrill. The mother noticed that the baby was "nervous"; slight jarring of the crib would cause the infant to stiffen out with head retracted. The baby vomited the breast milk at intervals during the third week, and at about the fourth week began vomiting each feeding, the vomiting becoming projectile in type. The baby seemed to feel more comfortable after vomiting. The stools were constipated and infrequent. The weight had remained stationary for about three weeks. It had been put on artificial feedings in an effort to stop the vomiting.

Physical examination was essentially negative except that the infant was fretting continuously; passive resistance of the extremities was present; the extremities were flexed; the hands were clinched and the reflexes exaggerated. The only abnormal report from the laboratory was a total serum calcium of 8.8. mg.

Treatment: This infant was put on a formula of skimmed lactic acid milk with one and one-half ounces of beta lactose. To this was added one dram of calcium gluconate and the baby was allowed to take all of four ounces that it wanted every four hours. Three drops of a 1 to 1000 solution of atropine was given preceding each feeding. Two c.c. of a 10 per cent solution of calcium gluconate was given intramuscularly as soon as the diagnosis was determined. Ten drops of viosterol was given daily.

The baby vomited only one feeding during this first twenty-four hours and slept practically through the first half of the day, but became very fretful again during the afternoon. As there had been no stool an enema was given, but the baby continued fretful and slept little throughout the night. The next day the calcium gluconate in the milk formula was increased to two drams. The baby seemed very comfortable after noon of the second day. From that point on the progress was uneventful. The atropine solution was discontinued after the fifth day. At the end of the first week the baby had gained seven ounces, weighing ten pounds. No hypertonia was present. A serum calcium determination at this time showed 9.6 mg. and the calcium gluconate in the milk was reduced to one dram. At the end of the second week the baby weighed ten pounds and eight ounces and the serum calcium was 10.2 mg. The calcium gluconate administered was reduced to thirty grains daily. At the end of the third week the weight was eleven pounds two ounces and the serum calcium 10.5 mg. From this point the calcium gluconate was discontinued. The mother was instructed to continue the viosterol and to return with the baby in one month. When the baby was next seen it was four months old, weighed fourteen pounds and there had been no return of any symptoms.

Discussion: The normal total serum calcium runs a bit higher in infants than in adults. Investigations by Jones, Mayer and Nohlen[1] have shown that the average during the first twelve days is 12.65 mg.; during the first two months 12.3 mg., falling to 11.5 mg. by the end of the fourth year. The effect of calcium upon the excitability of the nervous system has been positively demonstrated by Loeb[2] and others. A normal calcium metabolism prevents an increased excitability of both the somatic and autonomic nervous systems by inhibiting the stimulating action of the sodium and potassium ions.[3] Haas offered the suggestion some time ago that both pylorospasm and hypertrophic pyloric stenosis might simply be the dominant features of a general state of hypertonicity. Blood calcium exists in two forms, diffusible, which is represented by the spinal fluid calcium, and non-diffusible, which is bound to the serum protein.[3] It is the calcium ion concentration of this diffusible portion that effects nervous excitability. Therefore, the finding of a normal range of total serum calcium does not necessarily indicate a normal calcium balance as there may be a decreased calcium ion concentration in this diffusible portion.

In forty-three cases, of which I have detailed results, the total serum calcium range was from 7.0 mg. to 12.3 mg.

There are a number of other factors which influence calcium activity, e. g., pH concentra-

tion of blood, parathyroid activity, acid-base balance of tissue, etc.,[4-5-6-7] which will be discussed in another paper.

In treating pylorospasm, or gastro-enterospasm—which seems a more descriptive terms, —one has to deal with a vicious circle. The hypocalcaemia, or the reduction in calcium ion concentration through its excitation of the somatic and autonomic nervous systems, induces spasmodic closure of the pylorus with vomiting. Loss of hydrochloric acid by vomiting results in a relative alkalosis as well as reduced calcium intake. The alkalosis and reduction of calcium intake result in a reduced calcium ion concentration and at times a reduced total serum calcium. This reduction results in an increased excitability of the nervous systems with its associated spasmodic contraction of the pylorus and vomiting.

The objective of any method of treatment is to break this vicious circle. The administration of atropine solution through its antispasmodic action, or luminal by its sedative action, accomplishes this after varying lengths of time, by effecting an increased calcium intake and absorption. This series of cases was treated by the administration of calcium, and it was found that the duration of the condition was considerably shortened and the response much more prompt.

The cases were divided into two groups. One group received calcium therapy in the form of calcium gluconate, 2 to 5 c.c. of a 10 per cent solution intramuscularly daily to every other day and 1 to 3 drams of calcium gluconate powder daily in the milk formula. The formula used was skimmed lactic acid milk with beta lactose as the added sugar. This sugar was used because it has been shown that calcium absorption is increased in the presence of lactic acid fermentation of lactose in the small intestine.[8] Skimmed lactic acid milk was used, as fat interferes with calcium absorption.[9] Ten to twenty drops of viosterol were given daily.[10] A serum calcium determination was done at weekly intervals. The second group received the same treatment except that they were given atropine solution before feedings. This second group responded more quickly and seemed more comfortable. Due to the combined antispasmodic effect of atropine and calcium they retained their feedings better and the colic stopped as a rule during the first twenty-four hours. The first group, without atropine, continued to vomit at intervals for a few days. Each case received one intramuscular injection of calcium. The greatest number of injections any one case received was four. In this case the total serum calcium at the start was 7.0 mg. (This case had a marked associated laryngospasm with cyanotic attacks, marked hypertonia, but no convulsions.) The average length of time elapsing before cessation of symptoms, that is, when atropine could be discontinued and there was contentment and no more vomiting, was one week. In the group that did not receive atropine it was about twelve days. In none of the cases was it necessary to readminister atropine. The average length of time for a return to a normal level of total serum calcium was about three weeks. The administration of calcium by mouth was continued until the serum calcium approached a normal level. In those cases not showing a reduction in this total serum calcium it was continued for one week after cessation of all symptoms. It was not found necessary to use Collip's parathormone. All cases responded quickly and satisfactorily without it. It is best to keep the feedings low in fat throughout the course of treatment, not because, as was once thought, the fat tends to delay the opening of the stomach, but because fat tends to inhibit the absorption of calcium. Daily lavage with a sodium bicarbonate solution is contraindicated for obvious reason.

## Conclusions

1. Spasmodic closure of the pylorus in infancy is a manifestation of hyperexcitability of the somatic and autonomic nervous systems due to hypocalcaemia.

2. The term "gastro-enterospasm" is more descriptive of this condition than "pylorospasm."

3. The response to treatment with calcium is prompt and the length of time of treatment is considerably shortened.

4. The administration of atropine along with calcium insures greater comfort for the patient.

5. With the use of calcium the relief from this condition is permanent. No ill effects were noted.

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Discussion

Dr. S. A. Anderson, Richmond: This subject of pylorospasm is always a fascinating one for those who are particularly interested in children, and for those who are interested in adults, too, perhaps, to a lesser extent.

I think Dr. Mangum was wise in avoiding the question of when pylorospasm is to be considered hypertrophic pyloric stenosis, and he avoided the question of when to operate and when not to operate. I shall avoid that, too.

We are all familiar with the child, as he suggests, who is irritable, cries a great deal, is hypertonic, etc. There are always discussions as to the cause of this condition and what should be done to relieve it. There are certain facts which are always accepted, as demonstrated by the child himself. Some of these facts are that there is an obstruction to the pylorus and that the food does not leave the stomach as soon as it should. There is over-activity of the stomach muscles, as is frequently demonstrated by the visible peristaltic waves in the stomach. Sometimes, when there is a definite pyloric tumor present, this can be palpated. That does not come under our present discussion. There is also spasm at the pylorus, which accounts for the obstruction, demonstrated by the fact that food comes back from the stomach instead of going on, and is also demonstrated in X-ray studies by the use of the barium meal.

These children, as Dr. Mangum pointed out, are colicky, are generally hypertonic. In addition, there are other symptoms which might be called associated symptoms, which may or may not be present. These symptoms have been pointed out particularly by some men doing pediatrics around Chicago, Aldrich in particular. They have pointed out some symptoms associated with thymus enlargement, sometimes symptoms of holding the breath. Dr. Mangum mentions one case which he called laryngospasmodic cyanosis. We all know cyanosis is associated with laryngospasm. Other symptoms are queer noises in breathing, suggestive of tumor in the larynx, increased colic, restlessness at night, and cough. These things are all, he said, to be associated with these symptoms of pylorospasm. Because of these things, Dr. Mangum has told us, and because of these associated symptoms, physiologists have naturally turned toward atropin as the natural drug to attack this condition, because most of these symptoms can be explained on the basis of an increased tone on the vagus side of our autonomic nervous system, or perhaps decreased tone on the sympathetic side, which is the natural antagonist of the vagus side. Atropin is the drug we all try to use first, and perhaps we have been disappointed in finding it does not accomplish as much as we hoped it would accomplish. In addition to atropin, Dr. Mangum mentioned that phenylbarbital, or luminal, has been used for its sedative effects. This does not have some of the disagreeable effects that atropin has.

Vitamin B has been accused of being deficient in these children, and certain experiments have shown that the emptying time of the stomach in animals is improved when vitamin B is added to their diet.

Two years ago, because of these associated symptoms I have mentioned in the case of some very severely obstructed children, Dr. Barbour, of Peoria, Illinois, noticed that some of the children improved following X-ray studies. This led him to consider the possible effect of X-ray on these children, and he exposed a large number of them to X-ray over the thymic area. He reported remarkable improvement and suggested as a final therapeutic test that X-ray should be tried, to see if it might accomplish the result which it had been considered operation was the only means of accomplishing. Only last spring I found out that Dr. Barbour had changed somewhat from using X-ray and is following the logical thing along the line of vagotonia and is giving some children suprarenal gland. In connection with this he is also giving atropin. The rationale of that, I understand, is that after birth the suprarenal gland is known to involute to some extent, and he is assuming that there is over-involution of the gland at about two or three weeks of age, when most of these symptoms start, and that, therefore, the stimulus to the sympathetic side is lacking, and in furnishing this dried gland he is supplying the deficiency. In any event, he feels he is getting very satisfactory results. That raises the question, of course, whether this gland substance, in going through the digestive tract, is not destroyed.

I mention these things to show that there are various methods of attacking the problem. This evening we have been given another method of attacking it. It is suggested that deficiency of calcium is the cause of the hypertonicity, of which tetany, in children, is the most common manifestation. The possibility of a deficiency of calcium alone being responsible is, of course, open to some discussion. The calcium available in the baby's diet is abundant, because we are told that milk is the best source of calcium, and milk, either from the breast or from a cow's-milk formula, furnishes sufficient calcium for the baby's needs. The utilization of calcium is another matter. Dr. Mangum has mentioned that he uses viosterol in connection with the use of calcium. That, of course, is as it should be, as viosterol is known to increase the assimilation of calcium. It is interesting to speculate whether the administration of viosterol alone, in the ordinary diet, would have accomplished a similar result. (*Time called.*)

Dr. C. H. Bondurant, Bedford: I should like to ask Dr. Mangum if the ultra-violet light, in utilizing the calcium, would be of value.

Dr. Mangum, closing the discussion: As for the viosterol alone bringing about the desired results, viosterol's chief influence is upon the intermediary metabolism of calcium. Shelling, in 1932, was able to induce a hypercalcaemia in a parathyroidectomized animal with large doses of viosterol. In a baby the desired result might be obtained provided you could make the baby retain its calcium containing food.

The maintainance of a normal calcium balance is a complex problem. It is dependent upon a normal parathyroid activity; a normal hydrogen ion concentration of body fluids and tissues; a normal blood phosphorus and protein; a sufficient quantity of vitamine D; a sufficient calcium intake and a normal calcium absorption. It can be readily seen that this would be practically impossible in pylorospasm. To

begin with, the baby vomits about all the milk taken, thereby reducing the calcium intake and absorption. The vomiting also disturbs the acid-base balance.

As for the ultra-violet light, G. W. Clark found, in 1920, that irradiation caused an increased absorption of calcium. It would undoubtedly be of benefit in the treatment.

## MULTIPLE ABSCESSES OF THE LIVER COMPLICATING ACUTE APPENDICITIS—A CASE REPORT.

W. H. SAUNDERS, M. D.,
and
T. D. ARMISTEAD, M. D.,
Roanoke, Va.

In view of the fact that appendicitis is the most common acute abdominal disease seen clinically, and that hepatic abscess is probably the most rare and dreaded complication of appendicitis, this case of multiple abscesses of the liver is reported. Probably the first case reported in the literature was described by Waller[1] in 1846. Osler[2] stated that pyemic abscesses of the liver and suppurative pylephlebitis are invariably fatal. According to Babcock,[3] the mortality rate is 75 per cent from the solitary abscesses and almost 100 per cent from the multiple abscesses of the liver. Pyemic abscesses are usually multiple, this being the type usnally complicating appendicitis.

As mentioned above, the mortality rate from these abscesses is about 100 per cent. W. A. Barnes and William George reported one case each in 1928 in the *British Medical Journal* in which recovery followed surgical drainage. Quain and Waldschmidt[4] reported one thousand consecutive cases of appendicitis with only one complicated by multiple hepatic abscesses.

The following is a case record of liver abscesss complicating appendicitis:

H. W. P., male, age 26, was admitted to the Roanoke Hospital, September 6, 1932, complaining of severe abdominal pain. The onset was on the day prior to admission, when he was taken sick suddenly with generalized pain in the abdomen, followed by slight nausea but no vomiting, although he had eaten a light supper. The morning of admission his condition had grown definitely worse. He took a purgative which he vomited promptly and vomited several times afterwards. He stated that the pain had grown much worse, involving the entire abdomen, but was somewhat more severe in the lower right quadrant. He had had several large bowel movements that day. He gave no symptoms referable to the G. U. tract, but stated that he had had several similar attacks previously.

There was nothing of importance in the past or family history. Physical examination, excepting the abdomen, was essentially negative. There was tenderness over the entire lower abdomen, but most marked over McBurney's point, accompanied by muscular spasticity. There was no distention and no masses could be palpated.

On admission the temperature was 101.4, pulse 94, respiration 22. There were 6,150 white blood cells with 84 per cent polys. The urine, except for an occasional red blood and pus cell was negative. A diagnosis of acute appendicitis was made and appendectomy performed through a right rectus incision under ether anesthesia. The appendix was found to be acutely inflamed and gangrenous. The patient was returned from the operating room in good condition. On the second post-operative day he had a severe chill lasting fourteen minutes and followed by rise in temperature to 103.2. Following this he had severe chills at frequent irregular intervals, and on the seventh post-operative day the conjunctivae were definitely jaundiced. At this time roentgen examination of chest and abdomen showed an enormously enlarged liver shadow. The patient's condition grew steadily worse, the chills became more frequent, being followed by profuse perspirations, and the jaundice became quite marked. The total white blood count ranged between 6,000 and 22,000, the polys between 67 per cent and 88 per cent throughout the illness, and the urine contained only a trace of albumin and an occasional pus cell. The temperature ranged between 99 and 105, pulse 88 to 120, and respiration 20 to 30. On the twelfth post-operative day a second roentgen examination was done, the findings indicating a subphrenic abscess. The patient was taken to the operating room and, under gas and novocain infiltration anesthesia, an incision was made over the right twelfth rib, the rib resected and the incision carried through the fascia. The subphrenic space was explored but no collection of pus found. Inspection showed an abscess about the size of a small nut on the edge of the liver. The liver was enormously enlarged and engorged. After incision and drainage of this abscess a cigarette drain was inserted and the incision closed. The patient's condition grew steadily worse

and he died several hours following the second operation.

Permission was obtained for a limited post-mortem examination. This revealed multiple abscesses throughout the liver.

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*Medical Arts Building.*

## DIAGNOSTIC HINTS IN GYNECOLOGY.

EDWARD PODOLSKY, M. D., Brooklyn, N. Y.

Low backache, pain in the hips and down the thighs, and often pelvic soreness and distress are not uncommon symptoms secondary to foci in and about the cervix.

Stricture of the uterine cervix is manifested by persistent leucorrhea, dysmenorrhea, the passage of tarry menstrual blood and pelvic discomfort of varying intensity.

Many cases of amenorrhea have a minor pituitary aspect.

Many women with thyroid disease have an associated dysmenorrhea without demonstrable anatomic changes in the pelvic organs.

A history of repeated uterine bleeding following the expulsion of a "mole" should make one suspicious of a chorio-epithelioma.

The typical congenital, anteflexed uterus is a small uterus, with a long, conical cervix.

Pelvic peritonitis is the most common cause of retroversion of the uterus.

Developmental cysts of the vagina are always multiple, are arranged in linear fashion on the side wall of the vagina and in any part from the introitus as far up as the lateral fornix.

A pelvic abscess is usually the result of a leaking tube.

Trichomonas vaginalis is regularly found in the vaginal discharge of women complaining of offensive leucorrhea presenting a characteristic clinical picture.

Persistent vomiting in a non-pregnant woman, especially in a young one, is most likely of ovarian origin.

Look for an inflamed breast in a nursing woman who has symptoms of the grippe.

Bleeding from the uterus may not be due to local pathology. At times it is due solely to an underlying blood dyscrasia.

Leucorrhea is perhaps the most constant and the most common sign of pelvic disorder. It is the first to become manifest and the last to disappear.

An ovarian tumor, particularly one which is malignant, is usually hard and firmly adherent to the uterus, thus simulating a fibroid mass. Irregular hemorrhage is a rather common characteristic of these tumors.

Central backache is the type of backache most often associated with uterine displacement. Backache of the lumbar type is frequently extra pelvic in origin.

When carcinoma of the uterus develops before the climacteric it is usually associated with fibroids.

Stenosis of the cervical canal is quite often the sole cause of dysmenorrhea.

Pain in the lower abdomen in women is at times due to a chronic cervicitis.

When bleeding from the body of the uterus occurs during menopause it may be due to either benign or malignant pathology. The benign lesions are: Hypertrophic endometritis, fibroid polyps, fibroids, mucous polyps and rarely atrophic endometritis. Adeno-carcinoma and sarcoma are the malignant growths causing bleeding at this time.

Bearing down pain, although most frequently caused by prolapse, may also be caused by vulvo-vaginitis. Only a thorough pelvic examination will establish the real cause.

In chronic inflammation of the female pelvic organs the pain is usually aggravated for a day or more before the menstrual periods, and relieved after the flow is well established.

A very common cause of pain low down over the brim of the pelvis is a lacerated, catarrhal cervix.

Prolonged bleeding in the puerperium is quite frequently due to a retroflexed uterus.

A fibrous polypus projecting from the cervix and ulcerating, causes intermittent or continuous bleeding, and such polypi are most often found in women at or after the menopause.

One of the common causes of retention of urine in women is a cervical fibroid. This may be preceded by amenorrhea and bladder irritability for several months. The patient is usually in the late thirties and she is often nulliparous. There is usually no history of menorrhagia.

It can be stated in general that abnormal vaginal bleeding in young, unmarried women is usually systemic, while in older, married women it is more likely to be local.

Reflex dysmenorrheas occur quite frequently and are associated with some disturbance in a distant part of the body. The most common cause is some pathological condition in the nose.

Varicosities are a common cause of chronic pelvic hyperemia which is aggravated at menstrual time with severe pain, and it is nearly always overlooked as a cause.

The primary symptoms of uterine fibroids are hemorrhage, leucorrhea, pain, pressure dysmenorrhea, sterility and disturbance of pregnancy, labor or the puerperium. The secondary symptoms are anemia, thyroid and cardiovascular disorders.

All infected fibroids are painful, while uninfected fibroids are usually not painful.

An incarcerated intraligamentous growth often causes a very severe type of pressure pain. Quite often this pain is referred to the limbs.

A woman menstruating regularly at the age of fifty should be suspected of having a uterine fibroid, for fibroids have a tendency to prolong the menses.

Fibroids do not begin to cause bleeding after the change of life. They never become active after the menopause has been established.

Stellate injuries to the cervix always mean that the tearing has extended in the anterior and posterior parts of the cervix as well as to the sides.

A patient with acute pelvic cellulitis usually first complains of pain in the lower abdomen, which is greatly aggravated by movements.

Infantile genitalia usually predisposes to sterility.

Pelvic floor lacerations with relaxation, allowing the escape of spermatozoa, is often a cause of sterility.

New growths, cysts or inflammatory reactions about the ovaries may prevent the formation or expulsion of ova, and thus cause sterility.

Endocrine dysfunction is very often the cause of sterility. This should be suspected when a thorough examination reveals no other causes.

Endocervicitis with excessive secretion is a rather common cause of sterility.

Uterine displacements with adhesions about the ovaries is often the cause of sterility.

A sterility that is produced by a gonorrheal salpingitis is a permanent condition and there is no way to correct it that is successful.

Heart disease and arthritis secondary to diseased tonsils with disturbed nutrition may cause amenorrhea.

7119 *Nineteenth Avenue.*

## ABDOMINAL DRAINAGE.*

SOUTHGATE LEIGH, M. D., Norfolk, Va.

Nine-tenths of the surgeons you ask will tell you that any kind of drains put into the peritoneal cavity will in a few hours be shut off by adhesions and at once cease to function.

We have proven conclusively that over-filling the blood vessels by fluid, given promptly and continuously, will delay these adhesions from three to five days, and during that time the drainage materials, if properly selected and employed, will continue to function.

By using a proper drainage material, together with a correct position of the patient, and quick and continuous over-filling of the blood vessels, many valuable lives can be saved.

The method would be more widely adopted but for the fact that it requires great effort on the part of surgeons, assistants and nurses, together with every-minute watching of the patient.

The usual cases requiring this procedure are those of ruptured appendix, with free pus in the free peritoneal cavity. In such a case the transverse incision is made, a large, soft rubber, thick walled, non-kinking tube is passed down into the pelvis, and brought out at the extreme outer end of the incision. The bed is elevated and the patient placed on the right side, so that the outer end of the tube is its lowest point.

Fluid is given by rectum by the Murphy drip, aided, if need be, by intravenous and subcutaneous injections, in as large quantities as the patient's circulation will stand. These patients have no trouble from obstruction, the bowels move easily, and they have very little if any nausea, and no distention. They take fluid diet early.

The position is uncomfortable but absolutely essential, and readily maintained when its vital importance is explained clearly to the patient.

All but moribund cases recover and have no

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Norfolk, Va., December 7, 1933.

after trouble from obstruction or hernia, although they must be most careful about eating and having the bowels to move regularly and thoroughly. They require an enormous amount of attention for the first three to five days, especially in connection with maintaining the proper position and retaining the continuously injected fluids.

When we remember that the usual mortality in such cases runs as high as 33 per cent, we are stimulated to extreme efforts to give these patients close and continuous attention.

At the change of dressing, every twelve hours, it is noted in every case that, instead of the discharge ceasing or lessening, it steadily increases and grows gradually thinner. Each dressing is soaked with fluid. This is the absolute rule in every such case. The prevention of adhesions together with the position of the patient bring the septic materials down to the tube, through which they discharge. This method, while used most frequently in bad appendix cases, is applicable to others where free and continuous drainage of the peritoneal cavity is required.

For example, two of our more recent cases are, first, a typhoid perforation with a large amount of pus in the lower abdomen and pelvis, and, second, a bullet wound of the lower abdomen with four ragged holes in the small gut, requiring resection of eight niches. This latter case was brought some distance and several hours had elapsed before operation. Both made good recoveries.

As an example of a typical appendix case, we would mention in detail the following:

Ruptured appendix without adhesions, with half a pint of pus in the lower abdomen and pelvis. Transverse incision, with separation of the muscle fibers, the incision being extended far to the right by incising muscle tissue. Appendix removed and as much pus as possible suctioned out. Tube, with small perforations, passed down to bottom of pelvis and brought out at the outer end of the wound. Wound antisepticized and sutured up to tube. Very narrow gauze drain passed down inside of tube. Bed elevated and patient placed on the right side. Murphy drip of normal salt solution, using catheter in rectum and visible dropper. Rate 60 drips a minute for a few hours and then reduced to thirty a minute. Occasionally glucose is given intravenously. If in doubt about sufficient filling of vessels, saline given also under the skin. Fluids by mouth on the third day. No nausea. Dressing changed every twelve hours by surgeon himself; gauze and pads found soaked. Wick in tube renewed. Suction through tube shows no retention and demonstrates the fact that position is correct. Wound painted with alcoholic mercurochrome at each dressing. Low enemas third day with good result. No abdominal tenderness or distention. Fifth day tube shortened a little and removed seventh day, being replaced by rubber dam. Drip discontinued on the seventh day. Sinus sterilized by Dakin's solution beginning tenth day. Sutured part of wound well healed. No resulting hernia.

No cases in surgery afford greater satisfaction to the operator, and he is amply repaid for the great amount of time and effort and strict attention to every detail. With such care, every such case, unless moribund, will recover.

One thing that every surgeon should remember, and that is that acute appendicitis offers many surprises. One never knows what will be found until the abdomen is opened. Even with a moderate blood count and with little or no temperature, the appendix may be found ruptured with a small abscess located deeply surrounded by adhesions. Such a case requires great care to protect the surrounding cavity from becoming infected.

Or one may unexpectedly be confronted with a ruptured appendix with considerable pus in the free peritoneal cavity.

Such a case requires great care and the most perfect handling during and after the operation.

But with such perfect and continuous attention, a splendid result will be obtained.

# Woman's Auxiliary, to the Medical Society of Va.

*President*—Mrs. William Lett Harris, 1112 Matoaka Street, Norfolk.
*President-Elect*—Mrs. Joseph Bear, 3012 Monument Avenue, Richmond.
*Recording Secretary*—Mrs. Fletcher J. Wright, 49 South Market Street, Petersburg.
*Corresponding Secretary*—Mrs. Charles A Saunders, 1000 Gates Avenue, Norfolk.
*Treasurer*—Mrs. Reuben F. Simms, 2034 Park Avenue, Richmond.

## The Post-Graduate Medical Auxiliary

Held an open meeting at the Petersburg Hospital on January 17th. There were eighty

ladies present representing all the churches of the city.

The Auxiliary made an appeal in November to all the church Auxiliaries for supplies for hospital and the articles were brought in at this time. Mrs. H. M. Snead, retiring president of the Auxiliary was in charge of the shower and received the cooperation of all the churches.

When the articles were assembled and checked it was found that in addition to 40 single woolen blankets and a bolt of kitchen toweling, donated by the Medical Auxiliary, and already in use in the hospital, the shower gifts included: 151 sheets, 19 white crinkled spreads, 238 towels, 184 pair pillow cases, 18 woolen blankets, 115 yards of linen toweling, 110 yards of toweling for operating room, 40 yards of silence cloth, 4 bedside lamps, and $17.50 in cash. The approximate value of these articles was $570.60.

Mrs. Philip Jacobson was elected president of the Post-Gradnate Medical Auxiliary at the meeting held immediately after the shower. Other 1934 officers elected then were: Mrs. H. C. Jones, vice-president; Mrs. H. M. Snead, recording secretary; Mrs. Allen Barker, corresponding secretary; Mrs. W. B. McIlwaine, treasurer.

### Auxiliary to the Richmond Academy of Medicine.

Mrs. J. B. Stone has been elected president of the Richmond Auxiliary to succeed Mrs. Jas. B. Dalton, who recently resigned on account of ill health. Mrs. J. O. Fitzgerald is the new treasurer and Mrs. Fred J. Wampler the very efficient new secretary. Please, Richmond women, give your loyal support to these officers who have agreed to shoulder the responsibility of our organization for the coming year!

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At the regular February meeting of the Auxiliary to the Richmond Academy of Medicine the members were addressed by the President of the Academy, Dr. Joseph Geisinger. This was a high light in our recent history, and the timely advice and words of encouragement and appreciation were most gratefully received. Dr. Geisinger pointed out some dangerous pitfalls which we shall earnestly try to avoid, but he also pointed the way to specific work to which we may safely bend our interest and energy. At the next meeting the suggestions of Dr. Geisinger will be discussed and definitely acted upon by the Auxiliary.

Our group is deeply grateful to Dr. Geisinger for this heart-to-heart talk from him as a representative of the Academy. As an Auxiliary to the Academy we wanted to feel *necessary*, not just an organization with no excuse for being. The President has made us feel more sure of our standing with the Academy and has given us more of an incentive for working with our husbands toward a common goal.

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# Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted:

Fairchild Bros. & Foster
- Soluble Stomach Extract (Fairchild).

Gilliland Laboratories, Inc.
- Rabies Vaccine—Gilliland (Semple Method), 14 vial package.

Hynson, Westcott & Dunning
- Ampules Solution Antimony Thioglycollamide, 0.4 per cent, 10 c.c.
- Ampules Solution Antimony Sodium Thioglycollate, 0.5 per cent, 10 c.c.

Lederle Laboratories, Inc.
- Tablets Cod Liver Oil Concentrate (Lederle).

Eli Lilly & Co.
- Metycaine
  - Ampoules Metycaine 1%, 1 c.c.
  - Ampoules Metycaine 2% and Epinephrine (1:25,000), 1 c.c.
  - Ampoules Metycaine 2% and Epinephrine (1:50,000), 2.5 c.c.
  - Solution Metycaine 2%.
  - Tablets Metycaine, 0.15 Gm.

E. S. Miller Laboratories
- Ampoule Sterile Solution Dextrose, U. S. P., 50 Gm., 100 c.c.
- Ampoule—Vial Sterile Solution Dextrose, U. S. P., 10 Gm., 20 c.c.
- Ampoule—Vial Sterile Solution Dextrose, U. S. P., 25 Gm., 50 c.c.
- Ampoule—Vial Sterile Solution Dextrose, U. S. P., 50 Gm., 100 c.c.

National Drug Company
- Refined Diphtheria Toxoid (Alum Precipitated).

Parke, Davis & Co.
- Ventriculin, 500 Gm. bottle.
- Soluble Gelatine Capsules—Parke-Davis Haliver Oil, Plain, 3 minims.

Schering & Glatz, Inc.
- Urotropin
  - Tablets Urotropin 5 Grains (0.33 Gm.)
  - Tablets Urotropin 7½ Grains (0.5 Gm.)
- Euphthalmine Hydrochloride.

E. R. Squibb & Sons
- Refined Diphtheria Toxoid Alum Precipitated—Squibb.

Ucoline Products Co.
- Ucoline Standardized Cod Liver Oil.

### Propaganda for Reform

Valerian in Therapy.—Today valerian is recognized as having but little virtue, if any, in disease, such power as it has being largely psychic effects resulting from the impression created by its appeal to the sense of smell. Now attention is again called to this preparation by the fact that the health commissioner of New York has placed the sale of valerian and all its derivvatives under strict control, so that they may now be sold only on prescription by licensed physicians and veterinarians. Strangely, however, this control is exercised not because of any remarkably potent value or any lack of virtue attaching to valerian in the field of medicine, but simply because its odor is so all pervading, so penetrating and obnoxious that it has come to be the chief constituent of what is commonly called a "stink bomb." Thus the control of valerian is not induced by its medical uses but is instead to be a curb on racketeering in which "stink bombs" constitute a significant part of the materia racketeria (Jour. A. M. A., September 23, 1933, p. 1004.)

Contamination of Fruits and Vegetables with Toxic Insecticide Spray Material.—The Committee on Foods reports that distributors of fruits and vegetables that may bear toxic spray material are obligated to remove such poisonous contaminations before they enter commerce for retailing to the public, or to warn food manufacturers of the possible presence of the spray residue. Food manufacturers using fruits and vegetables should take proper precautions either to assure the absence of toxic spray contaminations or their removal before the products are prepared or packed for consumption. Distributors of fresh fruits and vegetables and manufacturers of foods containing these products bear a serious responsibility to the public that their products as presented for consumption are entirely wholesome; carelessness or disregard of this public health responsibility is criminal. (Jour. A. M. A., October 21, 1933, p. 1316.)

Mineral, Spring, Natural or Alkaline Waters.—The Committee on Foods reports that mineral, spring, natural or alkaline waters are usually advertised with unwarranted claims as to their health values. Analyses of most of these waters do not disclose explanations or evidence for remarkable curative properties. In case of potable mineral waters their mineral content comprises traces only of commonly occurring salts present in substantially greater quantities in ordinary foods. Such characteristics as radioactivity or the presence of lithium in drinking water have not been shown to have useful effects. Strongly radioactive waters may be distinctly harmful. Natural waters contain only traces of lithium. Larger doses of lithium may be dangerous. The committee reports further that therapeutic or curative claims for mineral waters that are not laxative are to be viewed with suspicion, and that the daily water requirements for health cannot be defined with any degree of exactness, as activity, temperature and other conditions influence the demands. (Jour. A. M. A., October 21, 1933, p. 1316.)

Acceptance of Sunlamps.—During the past seven years the Council on Physical Therapy has devoted much time and effort to the question of ultraviolet radiation therapy, and in two preliminary statements gave its conclusions and its specifications for acceptance of "sunlamps." Sunlamps, so called, are not to be confused with therapeutic ultraviolet generators designed for service in hospitals, clinics and offices of physicians. Since sunlamps are for unsupervised home use, they are often of low intensity to avoid injury from overdosage. In accepting sunlamps, the Council on Physical Therapy calls the attention of the profession to the following: A. The Council on Physical Therapy definitely withholds acceptance of the postulatory principle of dual-purpose lighting, because it is highly theoretical and acceptable clinical evidence substantiating its therapeutic or prophylactic value has not been presented. B. The Council on Physical Therapy declines to accept sunlamps if the manufacturer fails to state in all advertising matter and descriptive literature the distance between the lamp and the recipient required to equal the intensity of midday, midsummer, midlatitude, sea level, natural sunlight. C. The manufacturers of acceptable sunlamps for home use have agreed to discontinue objectionable claims, such as that exposure to ultraviolet rays increases or improves the tone of the tissues or of the body as a whole, stimulates metabolism, acts as a tonic, increases mental activity, maintains health or tends to prevent colds, because these claims have not been conclusively substantiated by experimental evidence. D. Until further evidence is presented to prove otherwise, the Council declares that the erythema test is the only means of determining whether appreciable ultraviolet is emitted by the source. (Jour. A. M. A., January 6, 1934, p. 42.)

Antipneumococcus Serum Containing Type II Antibodies.—The Council on Pharmacy and Chemistry reports that recently there has been brought to its attention evidence that with improved preparations and technic the experimental use of antipneumococcus serum containing type II antibodies or of preparations containing this antibody in combination with type I is justified. The Council therefore voted to consider the acceptance of these preparations, and voted to inform firms manufacturing the antipneumococcus serum of this decision. (Jour. A. M. A., December 16, 1933, p. 1968.)

# Book Announcements

**Case Studies in the Psychopathology of Crime.** By BEN KARPMAN, M. D., Psychotherapist, St. Elizabeth's Hospital, Washington, D. C.; Professor of Psychiatry, School of Medicine, Howard University, Washington, D. C. Published in a limited edition by the Mimeoform Press, Washington, D. C. Large octavo of two volumes, 1042-x pages. Price, $12.00 net, prepaid.

Crime and criminals we have had with us always. The crime problem may depend upon the shifts and changes in laws and mores for its recurring waves of intensity, but the fact of its existence is an eternal challenge to every citizen.

What the law thinks about the criminal covers myriad pages and often makes dry reading.

What the criminal thinks about the law is written in a luridly different language, and is quite illuminating at times.

The criminal is allowed to tell his own story in this book by Dr. Karpman, psychotherapist at St. Elizabeth's Hospital in Washington, D. C., and professor of psychiatry at Howard

University. The author states in the preface: "The present study is an attempt to gain an understanding of some problems of criminality through an intensive study of the lives of individual criminals, seeking particularly to uncover such psychogenic factors as may be found behind the criminal reactions proper." The method employed is the presentation of case studies on each of five patients confined for observation in St. Elizabeth's as "criminally insane."

The case records consist of the official record, the case history written by the patient, anamnesis and observations, patient's letters and follow-up in some instances, and the epitome. After the patients' case histories had been written unaided, questionnaires were made out and the new information incorporated into the original until the histories were "satisfactorily completed." The material was presented so as to adhere as closely as possible to the original, though it was necessary to transcribe "into the language that would be true to the meaning of the text and at the same time not offend the reader's ear." The patients were arrested on the following charges: robbing the American Railway Express Co., cashing brother's adjusted compensation certificate, attempted sodomy, impersonating a U. S. officer and attempting to extort money, and forgery of checks and impersonating a U. S. officer.

These case studies present a mass of interesting material. Judges, penologists, probation officers and law-makers should find food for thought in the patient's attitudes toward their own crimes, toward other criminals, and their reactions to court procedures and present penal practices. When the patients comment on the present prison systems, they feel that it has been grossly inadequate, at least in their own cases. Clinical psychiatrists, psychologists and social workers will be struck by the lack of information to serve as an adequate and accurate background against which case histories may be studied. The biographies are so much involved in delineating events leading up to the present status that the accounts of the childhood period are almost invariably inadequately treated. The possible exception is Case I.

Judgment of the value of this book should be reserved until the author shall have published a parallel volume which, he states, is planned in the near future under the title, "*The Individual Criminal.*" The present volume should prove for the author a valuable source book for the other book which we hope will attempt to summarize conclusions suggested by the present work. As it now stands, the reader is left with blurred impressions. We do not feel that we understand the individuals, nor is there any summary as yet to point out general trends in the development of criminal psychopathology. The author nowhere states just why these cases were chosen, whether typical of the group at Howard Hall or because of a certain similarity (most of these patients had at some time been diagnosed as psychopathic personalities) within the group or because of the possibilities of more accurate checks on their accounts. The analyses of the biographies by William Brandon, another patient, are helpful additions to the book in pointing out the discrepancies, contradictions, and limitations as they are presented in the bulk of the book. Until Dr. Karpman's supplementary work appears, we will be at a loss to know what is wheat and what is chaff in the raw material he has here presented.

The book, as an addition to studies of crime and criminals, will be most interesting to those whose contacts with this field come by the "armchair methods." It seems doubtful if much of it, except the sections on prison reforms suggested by the patients, will be new to persons who have dealt with prisons to any great extent.

In this review we do not feel adequate to summarize the material presented since it is doubtful if case histories of individuals can ever be adequately summarized in a few sentences or a paragraph. The ultimate value of this book will depend on the forthcoming parallel work by Dr. Karpman. Progress in understanding the individual criminal is made by steps such as this. One should make every effort to encourage and support the scientific spirit, for who can tell what strides may yet be taken?

Harvie DeJ. Coghill, M. D.
*and*
Evelyn Atkinson, M. A.

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# Editorial

## Hemidecerebrated Human Beings.

Although our conception of the brain as the seat of intelligence extends back to the time of Claudius Galen in the Second Century A. D., and although much progress in cerebral localization has been made particularly in recent years, we are still at loss to explain the function and interrelation of great areas in the human cerebrum. Latterly Walter E. Dandy (*Bulletin of the Johns Hopkins Hospital*, July, 1933) reports that he has removed the entire right cerebral hemisphere in three patients without disturbance of the thought processes in any one of them. To this operator it is "most disappointing" to find "that some functions of the brain are not stored or at least are not activated there." These disclosures are intensely interesting. Although familiar with experiments upon decerebrated frogs and pigeons and with the behavior of Goltz's dogs, it is difficult for us to realize that the human being can survive the loss of an entire cerebral hemisphere. To be told that he can survive it without demonstrable mental defect is even more astonishing. Postoperatively all of Dandy's cases showed hemiplegia and hemianesthesia but he reports that they were perfectly oriented and memory was unimpaired, that they were able to write, read and handle figures accurately, that they were coherent and free from abnormal mental states such as phobias, delusions, hallucinations, melancholia and expansive ideas. The fact that none of these patients survived operation many months may be important in the mortality statistics of neurological surgery but this minimizes in no way the interest Dr. Dandy's paper has for the student of the physiology of the brain.

## Roux and Calmette.

The passing within recent months of two eminent French men of science, Emile Roux and Albert Calmette, has brought forth expressions of world wide regret and sorrow. With Metchnikoff, Yersin, Chantemesse and Chamberland they were among the most brilliant of Pasteur's pupils. Each of them achieved fame in his own right—Roux discovered the organism of peripneumonia in cattle, and in collaboration with Yersin isolated the toxin of diphtheria and later demonstrated the possibilities of diphtheria antitoxin. Calmette gave to the world antivenom, tetanus antitoxin and a new and promising approach to the problem of prophylaxis in tuberculosis.

## The Sesquicentennial of the New Haven County Medical Association.

On Janury 5, 1784, a group of Connecticut physicians meeting in the "Coffee House" of New Haven organized the New Haven County Medical Association. After one hundred and fifty years of continuous existence this association has properly celebrated that notable event.

*The Yale Journal of Biology and Medicine* (January, 1934) is devoted to the fine things that were said on this occasion. Here appears an account of the history of the society, a facsimile reproduction of its original transactions —the first medical transactions to be published in America—as well as an address on *Medical Societies. Past and Present*, by Henry E. Sigerist, Director of the Institute of the History of Medicine of John Hopkins University. We congratulate the New Haven County Medical Association upon its long and enviable career.

**Last Year's Progress.**

George F. Dick commenting in *The 1933 Yearbook of General Medicine* upon important progress made during 1933 in the knowledge of the infectious diseases places emphasis upon three advances: (1) The growth in pure culture of the virus of variola and its practical use in the prevention of smallpox; (2) the increasing evidence of the value of scarlet fever toxin and antitoxin in prevention and treatment; and (3) the accumulation of bacteriological and serological evidence in support of the belief that the streptococcus hemolyticus rather than the streptococcus viridans is the etiological factor in infectious arthritis.

**Epidemic Amebiasis.**

During the summer of 1933 sixteen thousand guests registered at two Chicago hotels. Heavy rainfall about the last of June flooded the sewers and quantities of contaminated water overflowed the basement of one of these hotels, submerging the ice storage house. A few days later the breaking of two sewers in the other hotel flooded its ice house as well as its entire food handling establishment. Hard on these events cases of amebic dysentery began to develop among the personnel and guests of the hotel. The proportions of the epidemic became alarming. Up to the time of this writing no less than 774 cases of amebiasis with forty-two deaths have been reported among the summer patronage of these hotels. Most of the cases did not appear until they had returned to their homes in distant cities of the country. The epidemic took a toll of fourteen lives in Chicago and left 1,130 carriers in its wake.

Until now infected food has been considered the usual conveyor of the entameba histolytica, but in the light of the Chicago epidemic the possibility of water borne infections will have to be given serious attention in future outbreaks.

The results of several surveys indicate that from 3 to 5 per cent of the population is normally infected with the entameba histolytica. It is surprising that the disease has not assumed epidemic proportions oftener. It would seem that with such a high incidence of carriers among the population at large in the future particular attention should be paid to the identification and control of carriers among food handlers. Apparently this is not practicable on a large scale at the present time. It is probable that a great many people repeatedly and successfully withstand exposures to infection with the entameba histolytica. It is only when enormous quantities of infectious material are ingested, as must have been the case in the Chicago epidemic, that a high percentage of the exposed individuals develop the disease clinically.

Strange as it may seem, there appears to be still in existence in most of our cities antiquated plumbing which permits back syphonage from toilet fixtures into water lines as well as hazardous cross-connections between sewer and water lines. These conditions are said to have obtained in the Chicago hotels. With their bitter experience before us it is hoped that a more general employment of the sanitary engineer will make a repetition of such a calamity impossible.

# Department of Clinical Education
## OF THE MEDICAL SOCIETY OF VIRGINIA

**Peninsula Courses Well Begun.**

The rolls for the six classes in prenatal and postnatal care extending from Richmond to Hampton show a total membership of sixty-seven during the first four meetings of the course. Ten of the enrollments of Richmond physicians are those who were members of previous courses at the beginning of Dr. Lapham's work in Virginia.

The first tangible evidences of successful organization of a class are the enrollment and the rate of attendance. Four of the six groups,

those in Newport News and Williamsburg and the two classes of colored physicians in Richmond and Newport News, have the very commendable attendance record of over 80 per cent. The average for all the groups coincides almost exactly with that for previous classes, 78.4 per cent. The colored physicians in the special Newport News class, who have enrolled every practitioner of their race in the community, have the best attendance record, the high rate of 87.5 per cent.

New additions to several of the classes are as follows:

Williamsburg: New member—Dr. W. S. Cox.

Hampton: New members—Drs. F. S. Bacon and C. B. Shrout.

Richmond: New members—Drs. M. H. Eames, Horace Hoskins, A. W. Lewis, J. N. DeShazo, B. L. Reams. Visitor—Dr. C. C. White.

Richmond (Colored): New member—Dr. R. W. Davis. Visitors—Drs. H. A. Allen and W. H. Dixon.

**Plans for the Ninth Circuit.**

Dr. N. M. Canter, President of the Rockingham County Medical Society, has reported the unanimous approval by that group of a course in prenatal and postnatal care to begin on March 26th. A committee composed of Drs. A. C. Byers, B. S. Yancey and W. W. Koontz, has been appointed to take charge of organization and of arranging for patients for demonstrations.

Other points to be combined with Harrisonburg in Dr. Lapham's ninth circuit are Luray, Front Royal, Woodstock and Winchester. The Front Royal group, with an advance enrollment of seven members secured by Dr. D. M. Kipps, Chairman of the local committee, is already well organized. Committee members for the other centers are as follows: Winchester—Dr. B. B. Dutton; Luray—Dr. G. H. Long; and Woodstock—Dr. C. H. Spiggle. Drs. C. O. Dearmont and J. G. Brown are heads of committees on organization for Clarke and Rappahannock Counties, respectively.

Geo. W. Eutsler,
*Secretary, Joint Committee.*

# Proceedings of Societies

**The Elizabeth City County Medical Society.**

In a special meeting on January 29, 1934, adopted two resolutions. The first was a resolution originally sponsored by Dr. M. B. Hiden, of Warrenton, concerning Fees to Physicians as Witnesses. This was adopted in its original form by unanimous vote, signed by each member of the Society and a copy sent to each of our two representatives in the General Assembly. The second resolution was to protest against the so-called DeJarnette Bill, urging our representatives to vote against it and to vote for the legislation being introduced by the Medical Society of Virginia. This resolution was also signed by each member of the Society and copies were sent to Mr. Holt and Mr. Massenburg in Richmond.

The new officers of the Elizabeth City County Medical Society for 1934 are as follows: president, Dr. Eldred S. Jones, Hampton; vice-president, Dr. Harry D. Howe, Hampton; and secretary-treasurer, Dr. Robert H. Wright, Jr., Phoebus.

These officers were elected at a meeting in December. We anticipate holding regular meetings twice monthly and expect to put some life in our Society again.

Robert H. Wright, Jr.,
*Secretary.*

**Smyth County Medical Society.**

At a meeting of the physicians of Smyth County in Marion, Va., on February the 14th, it was decided to organize a county medical society to be known as the Smyth County Medical Society. The following officers were elected: President, Dr. A. B. Graybeal; vice-president, Dr. Carolyn Sherrill; and secretary-treasurer, Dr. E. A. Holmes. All officers are of Marion. Those attending this meeting were: Drs. T. K. McKee, Saltville; R. E. Hughes, North Holston; W. O. Neal, Chatham Hill; Carl F. Coffman, Sugar Grove; George D. Pettit, Chilhowie; and Drs. D. C. Boatwright, Willis M. Sprinkle, W. H. McCarty, George A. Wright, Stuart Staley, A. D. Hutton, James K. Gray, A. B. Graybeal, Carolyn Sherrill and E. A. Holmes, all of Marion. All those attending this meeting became charter

members and it is expected that others may join before the next meeting in March, when Dr. Southgate Leigh, of Norfolk, will address the Society.

**The Roanoke Academy of Medicine**

Held its regular meeting on February 5th at the Elks Club, in Roanoke, Va. The program was as follows:

Bronchial Fistula, Spontaneous Recovery—Dr. Harry Golston.

Problems in Trans-Urethral Surgery—Dr. S. Beverly Cary.

Pneumonia with Displacement of Heart and Mediastinum: Case Report—Dr. Blanton P. Seward.

Friedreich's Ataxia, Transitional Stage Tending to Marie's Disease: Two Cases—Drs. Charles A. Young and Thomas N. Spessard.

Three new members were elected to the Society: Dr. Hal Davis and Dr. H. Rudolph Hartwell of Roanoke, and Dr. S. J. Driver, Troutville.

The chairman of the Program Committee announced that the next meeting would be a special meeting on February 19th, at the Shenandoah Hospital, and that on March 5th the regular meeting would be a dinner meeting and Drs. Wm. B. Porter and Carrington Williams, of Richmond, would read papers.

Dr. E. C. Ambler and Dr. Mortimer H. Williams, both of Roanoke, are president and secretary-treasurer, respectively.

**The James City-New Kent Medical Society,**

At its meeting in February, re-elected Dr. J. R. Parker, Providence Forge, as president; Dr. J. R. Tucker, Williamsburg, as vice-president; and Dr. L. V. Henderson, Toano, as secretary-treasurer. At this meeting it was voted to change the fiscal year from February to December so that the time for the incoming officers would conform with that of most of the societies in the State.

**Princess Anne County Medical Society.**

The new officers of this Society are President, Dr. Robert W. Woodhouse, Virginia Beach, and secretary, Dr. Cora Z. Corpening (re-elected), also of Virginia Beach. This Society reports for the past year, one death, Dr. N. A. Nicholson, and one new member, Dr. I. L. Hancock.

# News Notes

**Physical Survey of C. W. A. Employees in Virginia.**

With the purpose of protecting workmen from avoidable injury or disease and the Government from future unjustifiable claims for compensation, a physical survey of the great army of C. W. A. employees in Virginia will be undertaken and will be extended to all others who may be added to this group in the future. It is probable that a similar survey will be made in other states, in which event the Virginia plan, if successful, will in all likelihood be adopted as a model for the rest of the country.

At the present time there are about 69,000 C. W. A. employees in Virginia and the practical details of instituting a medical examination of these men constitute a problem of momentous proportions. The Civil Works Administration of Virginia, through its State Safety Director, Col. William M. Myers, has exhibited a desire to place the direction of this work in the hands of the physicians themselves. A State Medical Advisory Board was, therefore, at once created for the purpose of elaborating a working system which has now been promulgated and the essential feature of which is to leave the selection of examiners along with any other associated details to the local medical organizations throughout the State or the local health units where no such medical organizations exist. A communication conveying these facts, and also more specific details with reference to the plan suggested by the Medical Advisory Board, has been forwarded from the headquarters of the Civil Works Administration of Virginia to every county in the State. Acting upon this communication, the local organization, or health unit, will be expected to canvass its own territory, select examiners, and immediately establish contact with the State Safety Director of the C. W. A., who will then forward necessary blanks and detailed instructions. Prompt response on the part of local organizations will be imperative, as work must be instituted immediately and completed at the earliest possible date.

The object of the Federal Government is two-fold: On the one hand it desires to protect itself from future unwarranted or unnecessary claims for compensation by determining the physical condition of an applicant and the present employees. More particularly, however, it wishes to protect the employees themselves. In an increasing number of instances, injury, disease, and even sudden death, have occurred among employees and could probably have been avoided if disabling defects in these unfortunates had been realized before they were allowed to go to work upon projects unsuited to their condition. The examination necessary to disclose gross defects of this type is not complicated or time-consuming. For this service a fee of seventy-five cents for each examination will be paid out of Government funds to all physicians acting as examiners. It is emphasized that the survey is primarily in the interest of the protection of American citizens from injury, disease, or death, and hence implies competence on the part of the examining physician. Assuming this competence, however, it is the desire of the Government that the work, with its compensation, shall go as far as practicable to those physicians who are themselves most in need. The State Medical Advisory Board, which has been called together by Col. Myers, and which will continue to function in an advisory capacity, is composed of: Dr. Joseph F. Geisinger, president of the Richmond Academy of Medicine, chairman; Dr. Warren F. Draper, Health Commissioner of Virginia; Dr. R. D. Bates, president of the Medical Society of Virginia; Dr. F. J. Wampler, who is being loaned by the Medical College of Virginia to act as a field representative of the Safety Director's office; Dr. Fred P. Fletcher, of Richmond, who has recently been instrumental in setting up a first-aid service in every county in Virginia; Dr. W. H. Parker, of Richmond, who has devoted much time and thought to the study of similar problems; and Maj. J. B. Anderson, of Richmond, who has done likewise in connection with his work in the medical corps of the U. S. Army.

The Richmond Academy of Medicine is the first organization in the State to express its official attitude toward this project. At a recent meeting it voted its cordial cooperation to the Civil Works Administration of Virginia and appointed committees to proceed at once to select examiners and to arrange, and oversee throughout, all the details of the survey in the territory embraced by this organization.

**The Tri-State Medical Association of the Carolinas and Virginia**

Held its annual meeting at Charlottesville, Va., February 12th, 13th and 14th, under the presidency of Dr. Francis B. Wilson, of Charleston, S. C. The splendid clinics in the main amphitheater of the University Medical School added greatly to the interest of this session. At the request of the Association, there was no public entertainment. A number of new members were admitted.

Charlotte, N. C., was selected as the 1935 place of meeting and the following officers were elected: President, Dr. Paul V. Anderson, Richmond, Va.; vice-presidents, Dr. H. S. Hedges, Charlottesville, Va., Dr. Clyde M. Gilmore, Greensboro, N. C., and Dr. Junius H. Taylor, Columbia, S. C. Dr. J. M. Northington, Charlotte, N. C., was re-elected secretary-treasurer.

**Superintendent at Epileptic Colony.**

Dr. George B. Arnold, acting superintendent at the State Colony for Epileptics and Feebleminded since the resignation of Dr. John H. Bell, was elected superintendent of the Colony by the General Hospital Board at its meeting in Richmond in February. Dr. Arnold is an alumnus of the University of Virginia, Department of Medicine, class of '27, and did postgraduate work at the University of Cincinnati, College of Medicine.

**Dr. R. L. Mason,**

Roanoke, Va., was recently appointed Assistant Surgeon in Chief, Sons of Confederate Veterans, for 1933-34. This appointment was made by Walter L. Hopkins, of Richmond, Commander-in-Chief, S. C. V.

**Dr. John R. Gill,**

For several years connected with the staff of Central State Hospital, Petersburg, Va., has located at Mathews, Va., for general practice.

**Dr. W. D. Kendig,**

Kenbridge, Va., has been elected chairman of the Democratic committee of Lunenburg County, Va., to fill the vacancy caused by the recent death of Dr. E. L. Kendig.

**Dr. W. C. Harman,**

Dolphin, Va., recently spent a vacation at Daytona Beach and Jacksonville, Fla.

**The 1934 Post-Graduate Course**

Of the Gill Memorial Eye, Ear and Throat Hospital will be held in Roanoke, Va., April 9th-14th. The following have already been enrolled:

Dr. H. C. Fulton, Lancaster, Pa.
Dr. I. E. Rowland, Charleroi, Pa.
Dr. Frank Vierling, Knox, Pa.
Dr. G. L. Dailey, 618 N. Third St., Harrisburg, Pa.
Dr. A. W. Shewman, Temple Bldg., New Castle, Pa.
Dr. R. G. Campbell, 328 Highland Ave., New Castle, Pa.
Dr. T. R. Gaines, Anderson, S. C.
Dr. B. R. Burke, Atlanta, Ga.
Dr. S. M. D. Marshall, Milford, Del.
Dr. O. H. Bobbitt, Charleston, W. Va.
Dr. E. Vermillion, Welch, W. Va.
Dr. O. C. Kendrick, Tallahassee, Fla.
Dr. J. C. Chandler, 205 York St., Tampa, Fla.
Dr. Wm. Patterson, 205 York St., Tampa, Fla.
Dr. B. W. Lowry, 205 York St., Tampa, Fla.
Dr. G. E. Campbell, Johnson City, Tenn.
Dr. M. A. Lackey, High Point, N. C.
Dr. R. G. Jennings, Thomasville, N. C.
Dr. W. M. Joyce, Middletown, Conn.
Dr. C. D. Townes, 610 Heyburn Bldg., Louisville, Ky.
Dr. C. T. Wolfe, 902 Heyburn Bldg., Louisville, Ky.
Dr. E. W. Troutman, 21 E. State St., Columbus, O.
Dr. B. W. Egan, Loganport, Ind.
Dr. O. G. Brubaker, 111 E. Main St., North Manchester, Ind.
Dr. J. T. Cater, 401 S. Court St., Montgomery, Ala.
Dr. R. E. Repass, Miami Beach, Fla.
Dr. J. R. Vermillion, Princeton, W. Va.

**Post-Graduate Clinic.**

The spring post-graduate clinic of the Medical College of Virginia will begin on the night of April 2nd when Dr. Frank Charles Mann, of the Mayo Foundation, will give the first of his two lectures under the Stuart McGuire lectureship. The clinic will extend throughout the day of Tuesday, April 3rd, and be concluded with Dr. Mann's lecture on Tuesday night. A complete program will be announced later.

Dr. Mann is a widely known and appreciated medical investigator. His lectures will be devoted to The Anatomy and Physiology of the Liver and the Experimental Pathology of the Liver.

**Married.**

Dr. Marvin Longworth Slate, High Point, N. C., an alumnus of the former University College of Medicine, Richmond, Va., and Miss Marion Wolfersberger, Baltimore, Md., December 23rd.

**Dr. Hugh C. Henry,**

Superintendent of Central State Hospital, Petersburg, Va., has been appointed by Governor Peery as a member of the Governor's Advisory Board on Mental Hygiene. His appointment is for four years, effective February 1, 1934. Other members of this board are Dr. Wm. F. Drewry, Dr. R. Finley Gayle, Dr. James H. Royster, Dr. James Asa Shield, Dr. Harvey DeJ. Coghill, Dr. James K. Hall, all of Richmond, and Dr. Geo. W. Brown, Williamsburg.

**Dr. Jean Jones Perdue,**

Daughter of Dr. and Mrs. J. Bolling Jones, of Petersburg, Va., recently located at Miami Beach, Fla., where she is associated with Drs. C. Frederic Roche and Harold A. Ryan, at 1213 Lincoln Road, for the practice of internal medicine. Dr. Perdue is an alumnus of the University of Virginia, Department of Medicine, class of '32.

**Doctors on Richmond T. B. Association Board.**

At the meeting of the Richmond (Va.) Tuberculosis Association and Camp Harrison Auxiliary, early in February, Drs. P. D. Lipscomb and Kinloch Nelson were elected as two of the vice-presidents, and Drs. Robert C. Bryan, E. C. Harper and S. A. Anderson, Jr., were re-elected as directors.

**Transferred to Camp Fort Eustis.**

Acting Assistant Surgeon A. H. Smith has been assigned as Chief Medical Officer at the Federal Correctional Camp at Fort Eustis, Va., upon the relief and transfer of Passed Assistant Surgeon (R) R. P. Hagerman, early in February.

**Officers in Lexington Group.**

At the annual meeting of the Frank Paxton Sons of Confederate Veterans held recently in Lexington, Va., Dr. Reid White, Jr., was elected surgeon and Dr. E. P. Tompkins historian of the camp. Both doctors are of Lexington.

**Medical College of Virginia News.**

The Saint Philip Hospital Clinic for Negro physicians will be held again this summer at the Medical College of Virginia. This work is subsidized by the General Education Board of New York, this being the fourth year the clinic has been held.

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The number of patient visits to the outpatient department for the month of January totalled 5,464.

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President W. T. Sanger attended the annual meeting of the Association of Virginia Col-

leges in Roanoke, February 9th and 10th. While in Roanoke he also addressed a meeting of alumni.

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The regular monthly meeting of the faculty and staff of the College was held February 8th. The program was as follows:

Dietary Regulations in Uncomplicated Diabetes, by Dr. Harry Walker with discussion opened by Dr. Powell Williams.

Problems of Common Interest to Medicine and Dentistry, by Dr. Harry Lyons.

Factors in Inheritance, by Dr. St. George T. Grinnan.

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Mr. D. E. Seagle, of Pulaski, a member of the State Board of Pharmacy, was a recent visitor to the college.

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Dr. Frank Charles Mann, professor of experimental surgery, Mayo Foundation, will deliver the Stuart McGuire lectures for the current year on the nights of April 2nd and 3rd at the Medical College of Virginia, Richmond. Dr. Mann's subjects will be The Anatomy and Physiology of the Liver, and Experimental Pathology of the Liver.

The Stuart McGuire lectureship, inaugurated during the session 1929-30 in recognition of Dr. McGuire's service as teacher and president of the Medical College of Virginia, has been filled thus far by Dr. William J. Mayo, Rochester, Minnesota; Dr. S. A. Mitchell, University of Virginia; Dr. James S. McLester, University of Alabama medical school, and Dr. Ronald T. Grant, University College Hospital medical school, London.

**News From University of Virginia, Department of Medicine.**

At the meeting of the University of Virginia Medical Society on January 15th Dr. Oscar Swineford spoke on the subject of Serum Sickness; Dr. William Brumfield spoke on Transmission of Syphilis.

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Dr. John D. Ferrell, Assistant Director of the International Health Division of the Rockefeller Foundation, visited the Medical School on January 16th.

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On February 5th, Dr. H. B. Mulholland spoke before the Medical Society of the Southside Community Center at Farmville on the subject of Treatment of Diabetes.

The thirty-sixth annual session of the Tri-State Medical Association of the Carolinas and Virginia with Graduate Clinics of the University of Virginia Medical Faculty was held at the Medical School on February 12th to 14th.

**News Notes from Duke University School of Medicine and Duke Hospital.**

On January 26th Dr. George L. Streeter, of the Carnegie Institution, Department of Embryology, Baltimore, Md., gave a lecture at Duke Hospital on Foetal Amputations.

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On February 9th Dr. E. F. Lowry, of the United States Navy Recruiting Station, at Raleigh, N. C., delivered a lecture on the subject of A Medical Career in the Navy.

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On February 17th Dr. Charles D. Lucas and Dr. Fred W. Stewart, of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City, gave a clinic on Cancer.

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The following appointment has been made: Dr. Raymond S. Crispell, Associate Professor of Neuropsychiatry, Duke University School of Medicine, and Psychiatrist, Duke Hospital. Dr. Crispell received his A. B. and M. D. degrees from Cornell University in 1917 and 1920. He served on the staff of Bloomingdale Hospital and was Instructor in Neuro-anatomy at Cornell from 1920 to 1923; was House Physician and Resident Neurologist at Bellevue Hospital, New York City, from 1921 to 1923: Fellow in Neurology, University of Utrecht, Holland, 1925, and Medical Director, Sahler Sanitarium, Kingston, N. Y., from 1926 to 1933.

**Dr. Euclid Neal,**

Who practiced for sometime at Big Island, Va., has located at Alta Vista, Va.

**Dr. Peter B. Pulman,**

Alexandria, Va., who returned early last summer from Porto Rico where he was connected with the medical staff of the Maryland Casualty Company, has accepted the position of a surgical advisor with the Aetna Life Insurance Company as a full time employee and has entered upon his new duties in the New York City offices.

**Dr. Robert Whitehead,**

Who has practiced for some time in Richmond, has moved to Victoria, Va.

**Special Lectures at N. Y. Polyclinic Medical School and Hospital.**

The following special lectures were given at the New York Polyclinic Medical School and Hospital:

On Wednesday, January 10th, Certain Considerations in Pneumonia in Children, by Dr. Walter H. Levy.

On Tuesday, February 6th, Diagnosis and Treatment of Endocrine Conditions in Infants and Children, by Dr. Murray B. Gordon, Professor of Clinical Pediatrics at the Long Island College of Medicine.

On Wednesday, February 14th, Lobar Pneumonia, by Dr. Russell L. Cecil, Professor of Internal Medicine at the New York Polyclinic Medical School and Hospital.

On Friday, February 23rd, Atelectasis as a Common Post-Operative Condition, by Dr. James S. Edlin.

These were all open to the medical profession.

**Unusual Record.**

Following publication in the newspapers recently of a case where a baby weighed 18½ pounds at birth, Dr. R. S. Griffith, of Waynesboro, Va., announces that one of his patients in that city is the mother of seven children, each of which weighed more than twelve pounds at birth and that one of them, a boy, weighed 18½ pounds.

**Appointed to Staff of Merck Institute of Therapeutic Research.**

The Merck Institute of Therapeutic Research, Rahway, N. J., announces the appointment of Dr. Eugene Maier as Chief Bacteriologist.

Dr. Maier is a graduate of the University of Tuebingen. Wuertemberg, Germany and completed his studies at the University of Erlangen, Germany. He was associated with the Rockefeller Institute of New York as Research Assistant from 1926 to 1930. Since 1931, up to the time of becoming associated with Merck & Co., Inc., Dr. Maier has been at Bellevue Hospital, New York, in the department of pathology, as bacteriologist for the Tuberculosis Division of Columbia University.

**Dr. Charles O. Moody,**

Class of '31, Medical College of Virginia, recently located at Hampton, Va., has gone to Chicago, where he is with Little Company of Mary Hospital, 95th and California Avenue, that city.

**Dr. Alfred J. Coan,**

Class of '33, University of Virginia, Department of Medicine, and member of the Baltimore City Medical and Chirurgical Faculty, has recently been appointed to an assistant residency in surgery at the West Baltimore General Hospital.

**Dr. Alexander N. Chaffin,**

Class of '29, Medical College of Virginia, recently located at Rural Retreat, Va., moved to Galax, Va., the first of this month, where he will be associated with Dr. Beverley F. Eckles at the Galax Hospital.

**Dr. Charles C. Hedges,**

Formerly assistant superintendent of Johns Hopkins Hospital, Baltimore, has been appointed superintendent of the Roosevelt Hospital, New York City. Dr. Hedges is a member of the class of '22, University of Virginia, Department of Medicine.

**Books Available to Members.**

The following are recent additions to the Library of the Medical College of Virginia, Richmond. They are available to our members, the only cost being return postage.

Findlay—Physical Chemistry.
Fischer—Local Anesthesia in Dentistry.
Fishbein—Frontiers of Medicine.
Fosdick & Scott—Toward Liquor Control.
Getman—Outline of Theoretical Chemistry.
Gifford—Handbook of Ocular Therapy.
Gilman—Organic Syntheses (Collective Vol. 1).
Ghesel—A Facsimile of the Rule of Health.
Gillespie—Physical Chemistry.
Gillies—Plastic Surgery.
Glasser—Wilhelm Conrad Roentgen.
*Graves—Gynecology.
*Gray—Anatomy.
Hall—Text-book of Quantitative Analysis.
Hapgood—History of Harvard Dental School.
Herbst—Malformation of the Jaws.
Herrick—Thinking Machine.
Hindus—The Great Offensive.
Holmes—X-Ray Interpretations.
*Homan—Surgery.
*Howell—Physiology.
Hyatt—Prophylactic Odontology.
Karsner—Human Pathology.
*Keyes—Urology.
Kingzett—Chemical Encyclopedia.
Koller—Cosmetics.
Kronfeld—Histopathology of the Teeth.
Lambert & Goodwin—Medical Leaders from Hippocrates to Osler.
Le Comte—Manual of Urology.
Lindsay—A Short History of Dentistry.
Lloyd—Felix Moses.
Lloyd—Etiodorpha.
Lloyd—Stringtown on the Pike.
Lloyd—Vegetable Drugs.
Lucas—Medicine for Dental Students.
McBride—Doctors and Patients.
McCallum—Text-book of Pathology.

Martin—The Joy of Living: an autobiography.
Mathews—Physiological Chemistry.
Medical Research Council Special Report, Ser. No. 167—Vitamins: A Survey of Present Knowledge.
*May—Ophthalmology.
Miner—New Dentistry.
Mitchell—Fundamentals of Astronomy.
Moore—The Modern Treatment of Syphilis.
Osborn—From the Greeks to Darwin.
*Osler—Principles and Practice of Medicine.
Patten—Early Embryology of the Chick.
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# Obituary Record

**Dr. John Walker Carter Jones,**

Prominent specialist of Newport News, Va., died on February the 9th, after an illness of several months. He was a native of Gloucester County, Va., and fifty-five years of age. He graduated in medicine from the University of the South, Sewanee, Tenn., in 1900 and later attended eye, ear, nose and throat clinics in New York and abroad. Following this, he located in Newport News where he had practiced for twenty-seven years. Dr. Jones had been a member of the Medical Society of Virginia for a number of years and was connected with several other medical organizations and was a Rotarian and a Mason. His wife and two sisters survive him.

**Dr. Harry Wilson Porter,**

Widely known and beloved physician of Louisa, Va., died suddenly at his home in that place on February the 20th, the cause of death being apoplexy. He was 59 years of age and studied medicine at the University of Virginia, receiving his diploma from its Medical Department in 1896. Upon completing an internship in Richmond, he returned to Louisa and had practiced there about thirty-five years. Dr. Porter was a Mason and member of the Medical Society of Virginia since 1898. He is survived by his wife and five sons.

**Dr. George Bright Young,**

For many years prominent in health work, died at his home in Charlottesville, Va., February 13th, after an illness of several months. He was a native of New Orleans, La., and 73 years of age. After attending the University of Virginia for a time, he entered the University of Maryland and received his degree in medicine from that school in 1887. He entered the U. S. Public Health Service in 1890 and did much important work in this field, notable among his achievements being his term as city commissioner of health in Chicago from 1911 to 1915. Upon his retirement from the service in 1924, he located in Charlottesville, where he was elected joint health officer of the city, county and University and also associate professor in preventive medicine at the University of Virginia, which positions he held until 1931. He was a member of the Medical Society of Virginia and several other medical organizations. Dr. Young is survived by his wife and four children.

**Dr. Basil Dennis Spalding**

Died at his home in Richmond, Va., on February 18th. He was 70 years of age and graduated in medicine from the University of Maryland, class of 1891. Dr. Spalding specialized in diseases of the eye, ear, nose and throat but retired about fifteen years ago on account of his health. Since then he had lived part of the time in Maryland and in Richmond. He is survived by his wife and four children.

**Resolutions on Death of Dr. Kimbrough.**

The Norfolk County Medical Society has adopted the following resolutions on the death of Dr. A. M. Kimbrough:

On January 15, 1934, our fellow member, Dr. Allan Moore Kimbrough, passed to his eternal rest. Although he had been in practice in Norfolk less than five years, he had greatly impressed both the members of his profession and the public in general with his conscientiousness and ability. He will be particularly missed because of the great amount of charitable work he did among the poor at all the clinics of the city. His untimely death at the age of thirty-seven terminated a useful and most promising career. Therefore,

Be it Resolved, That the Norfolk County Medical Society feels keenly the loss of one of its most active members.

Be it Further Resolevd, That a copy of these resolutions be recorded in the minutes of this Society, and that a copy be forwarded to his family and to the Virginia Medical Monthly.

G. R. Berkeley, M. D.,
Raymond Kimbrough, M. D.,
A. D. Parker, M. D.,
*Committee on Resolutions.*

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